AtkinsRéalis

Scoping Report - Appendix C EIA Methodologies

Uniper UK Limited

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SALINAE HYDROGEN STORAGE PROJECT

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Contents[1]

[1] Note the section references in this Appendix are numbered to align to the chapter reference in the main Scoping Report e.g. Appendix C section 9 aligns to Chapter 9 (Biodiversity) in the main Scoping Report.

Tables

9. Biodiversity

9.1. Assessment methodology and Study Area

9.1.1. The study area is defined by the Ecological Zone of Influence (EZoI) which has been used to inform the extent of the desk study and survey area. The EZoI is the area within which ecological receptors may be affected (directly or indirectly) by a proposed development during construction, operation, or decommissioning.

9.1.2. The EZoI includes the Site boundary[2], but due to the relative importance of some biodiversity resources and the mobility of some species, the study and survey area have been extended from the Site boundary to obtain information on biodiversity resources at difference spatial extents. The desk and survey area for each ecological receptor has been provided within Table 9-1.

Table 9-1 Desk and survey area for each ecological receptor

Receptor	Desk study area	Field survey area
Statutory designated sites for nature conservation	2 km	50 m
	30 km for SAC where bats are noted as a qualifying feature	
	Any European Site that has potential hydrological or hydrogeological linkage to the Scheme with a groundwater dependent terrestrial ecosystem which triggers the criteria for assessment of European sites in accordance with DMRB LA 113[3]	
Non-statutory designated sites for nature conservation	2 km	50 m
Irreplaceable habitats (such as ancient woodland)	2 km	50 m
Priority habitats	500 m	50 m

[2] This boundary shows the limits within which works associated with the Scheme may be carried out. This includes the land required permanently and temporary for the operation and construction of the Scheme.
[3] DMRB LA 113 Road drainage and the water environment, March 2020.

Receptor	Desk study area	Field survey area
Watercourses (main rivers[4] and ordinary watercourses[5])	2 km[6]	Typically, within the DCO boundary but can vary depending on site suitability for survey methodology
Standing water bodies (ponds and lakes)[7]	150 m	150 m
Great crested newts	500 m for water bodies that may be used as breeding sites	500 m
Bats	5 km for data search[8]	500 m for habitat suitability assessment. Bat activity surveys: 50 m Bat ground level tree assessment surveys and tree climbing surveys: 50 m Bat emergence surveys: up to 50 m
Badgers	2 km	250 m from the route, or 50 m from the DCO boundary (whichever was furthest)
Birds	5 km for any priority birds	50 m for bird transect surveys
Otters	2 km	175 m for water bodies and watercourses for their suitability for otters
Water Voles	2 km	175 m up and down stream of any water bodies and watercourses that were within 50 m of the DCO boundary.
Other priority species	2 km	50 m

[4] A watercourse shown on the statutory main river map dataset. These are typically larger streams and rivers, but some of them are small watercourses of significance. They include certain structures that control or regulate the flow of water in, into or out of the channel. The Environment Agency has permissive powers, but not a duty, to carry out maintenance, improvement or construction work on designated main rivers. The Environment Agency has powers to regulate the activities of others affecting rivers and their flood plains under the Environmental Permitting Regulations 2016, the Water Resources Act 1991 and land drainage byelaws.

[5] All other watercourses are defined as ordinary watercourses. The Lead Local Flood Authority (LLFA) or, if within an Internal Drainage District, the Internal Drainage Board (IDB) have similar permissive powers to maintain and improve ordinary watercourses. The LLFA or IDB have powers to regulate works under the provisions of the Land Drainage Act 1991 and local byelaws. Ordinary watercourses include rivers, streams, land and roadside ditches, drains, cuts, culverts, dikes, sluices, sewers (other than public sewers within the meaning of the Water Industry Act 1991) and passages, through which water flows.

[6] Along hydrologically connected watercourses that occur within 150 m of the DCO boundary. Aquatic ecology screening and study areas are defined in Appendix 8.3 (TR010034/APP/6.5).

[7] Standing water bodies include both ponds (< 2 ha) and lakes (> 2 ha) as defined in Williams, P., Biggs, J., Thorne, A., Bryant, S., Fox, G. and Nicolet, P., 1999. The Pond Book: a guide to the management and creation of ponds. Ponds Conservation Trust, Oxford.

[8] http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol10/section4/ha8099.pdf. 'The investigations may need to be extended up to 5 km beyond the corridor for desk top studies'.

9.2. Assessment of Sensitivity (Value)

9.2.1. The nature conservation importance or potential importance of an ecological feature will be determined within the following geographic context (adapted from the framework for assessing, mitigating and reporting the impact on biodiversity resources as set out in the Design Manual for Roads and Bridges LA 108 Biodiversity[9]).

Table 9-2 Criteria for determining the value of biodiversity receptors

Importance level	Sites	Habitats	Species
International or European	Internationally designated sites for nature conservation, including: Special Protection Areas (SPA); potential SPA (pSPA); Special Areas Conservation (SAC); Candidate or possible SACs (cSAC/pSAC); and Wetlands of International Importance (Ramsar sites).	N/A	Resident, or regularly occurring, populations of species which can be considered at an international or European level.
UK or National	Internationally designated sites for nature conservation, including: Sites of Special Scientific Interest (SSSI); National Nature Reserves (NNR); and Marine Protected Areas (MPA) including Marine Conservation Zones (MCZ).	Areas of UK Biodiversity Action Plan (BAP) priority habitats Areas of habitat which meet the definition for habitats listed above but which are not themselves designated or listed as such.	Resident, or regularly occurring, populations of species which can be considered at UK or national level.
Regional	Designated sites (non-statutory) including heritage coasts.	Areas of habitats identified (including for restoration) in regional plans or strategies (where applicable).	Resident, or regularly occurring, populations of species which can be considered at a regional level.
County or equivalent authority	Non-statutory designated sites for nature conservation (such as Sites of Biological Importance).	Areas of habitats identified in county or equivalent authority plans or strategies (where applicable).	Resident, or regularly occurring, populations of species which can be considered at county level.

[9] Highways England. (2020). Design Manual for Roads and Bridges: LA 108 Biodiversity. Available online at: LA 108 - Biodiversity (standardsforhighways.co.uk)

Importance level	Sites	Habitats	Species
Local	Wildlife or nature conservation sites designated at a local level.	Areas of habitat considered to appreciably enrich the habitat resource within the local context including features of importance for migration, dispersal, or genetic exchange.	Populations or communities of species considered to appreciably enrich the habitat resource within the local context including features of importance for migration, dispersal or genetic exchange.

9.2.2. A number of resources will be used to determine importance. These are referenced, where relevant, within the baseline results.

9.2.3. The Environmental Statement (ES) chapter will undertake a detailed assessment of ecological features considered to be 'important' (known as Important Ecological Features (IEFs)). The baseline information and nature conservation evaluation will be used to identify IEFs which can be designated sites for nature conservation, habitats, species, ecosystems, and/or their functions/processes considered to be important and potentially affected by the Proposed Development.

9.2.4. Ecological features that have been identified to be of less than local importance are not considered to be IEFs and as such, will not be considered within the impact assessment. Where mitigation is required for these features for legal reasons this will be detailed within the mitigation section.

9.3. Magnitude of Impact

9.3.1. The assessment of the potential impacts of the Proposed Development will take into account both on-site impacts and those that may occur to adjacent and more distant ecological features.

9.3.2. Where impacts have been identified, details are provided within the assessment to characterise these in terms or their extent and magnitude, duration, frequency and timing, and reversibility. Both adverse and beneficial impacts will be discussed. Impacts will be characterised in terms of how they occur, i.e. direct, indirect secondary or cumulative. Impacts can be permanent or temporary and can include:

- Direct loss and degradation of wildlife habitats;
- Fragmentation and isolation of habitats;
- Mortality and injury to species;
- Disturbance to species from noise, light or other visual stimuli;
- Changes to key habitat features; and
- Changes to the local hydrology, water quality and/or air quality.

9.3.3. For designated sites for nature conservation, effects will be considered significant when a project and associated activities are likely to either undermine or support the conservation objectives or condition of the site(s) and its features of interest.

9.3.4. For habitats, effects are considered significant when a project and associated activities are likely to result in a change in habitat structure and function.

9.3.5. Consideration will be given as to whether:

- Any processes or key characteristics will be removed or changed;
- There will be an effect on the nature, extent, structure and function of component habitats;
- There is an effect on the average population size and viability of component species; and
- Functions and processes acting outside the formal boundary of a designated site has also been considered, particularly where a site falls within a wider ecosystem e.g. wetland sites.

9.3.6. Some habitats can tolerate a degree of minor changes, such as localised or temporary disturbance or changes in physical conditions, without such changes harming their function or importance. For the ES chapter, ecological effects will be considered in the light of any information available about the capacity of habitats to accommodate change. Significant effects will be determined as being either adverse or beneficial.

9.3.7. The conservation importance of undesignated habitats and species within a defined geographical area (International to Local) will be used in the assessment to determine whether the effects of the proposals are likely to be significant:

- For habitats, conservation status will be determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area; and,
- For species, conservation status will be determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

9.3.8. When assessing potential impacts on conservation importance, the known or likely background trends and variations in status will be taken into account. The level of ecological resilience or likely level of ecological conditions, that would allow the population of a species or area of habitat to continue to exist at a given level or continue to increase along an existing trend or reduce a decreasing trend, will be estimated where appropriate to do so.

9.3.9. The avoidance, mitigation, compensation and/or enhancement measures will be incorporated into the design and operational phasing programme and taken into account in the assessment of the significance of effects. These mitigation measures include those required to achieve the minimum standard of established good practice together with additional measures to further reduce any adverse effects of the Proposed Development. The mitigation measures will include those required to reduce or avoid the risk of committing legal offences.

9.3.10. The principles of the mitigation hierarchy[10,11] will be adopted and used when considering impacts and subsequent effects on IEFs within the Zone of Influence (ZoI). The principles of the mitigation hierarchy are that, in order of preference, impacts on biodiversity should be subject to:

- Avoidance: Seek options that avoid harm to ecological features (for example, by locating on an alternative site);
- Mitigation: Adverse effects should be avoided or minimised through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation; and
- Compensation: Where there are significant residual adverse ecological effects despite the mitigation proposed, these should be offset by appropriate compensatory measures.

9.3.11. Additionally, projects should seek to provide enhancements which are net benefits for biodiversity over and above the requirements for avoidance, mitigation, or compensation.

9.3.12. The criteria for defining impact magnitude are set out in Table 9-3.

[10] Department for Communities and Local Development (2023) National Planning Policy Framework. Available online at: National Planning Policy Framework - GOV.UK

[11] CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (2018) (Updated September 2024): Terrestrial, Freshwater, Coastal and Marine, Paragraph 1.19. Chartered Institute of Ecology and Environmental Management, Winchester. Available online at: EcIA-Guidelines-v1.3-Sept-2024.pdf

Table 9-3 Criteria for determining impact magnitude

Magnitude	Criteria	
Major	Adverse	Permanent/irreversible damage to a biodiversity resource. The extent, magnitude, frequency, and/or timing of an impact negatively affects the integrity or key characteristics of the resource
	Beneficial	Permanent addition of, improvement to, or restoration of a biodiversity resource. The extent, magnitude, frequency, and/or timing of an impact positively affects the integrity or key characteristics of the resource.
Moderate	Adverse	Temporary/reversible damage to a biodiversity resource. The extent, magnitude, frequency, and/or timing of an impact negatively affects the integrity or key characteristics of the resource.
	Beneficial	Temporary addition of, improvement to, or restoration of a biodiversity resource. The extent, magnitude, frequency, and/or timing of an impact positively affects the integrity or key characteristics of the resource
Minor	Adverse	Permanent and irreversible damage to a biodiversity resource. The extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.
	Beneficial	Permanent addition of, improvement to, or restoration of a biodiversity resource. The extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.
Negligible	Adverse	Temporary and reversible damage to a biodiversity resource. The extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.
	Beneficial	Temporary addition of, improvement to, or restoration of a biodiversity resource. The extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.

9.4. Significance of Effect

9.4.1. Impacts will be assessed and described within the setting of their assigned value and will be described and reported using the following terms relating to significance applied: Major, Moderate, Minor, Negligible, or No Change. The approach to the derivation of significance is as detailed within Table 9-3 (adapted from DMRB LA 108).

9.4.2. For the purposes of the assessment and in accordance with good practice, where more than one significance level is shown in Table 9-4, professional judgement will be used to clarify the differentiation and conclude the effect.

9.4.3. Very large, Large, and Moderate effects are considered ‘significant’. Slight and Neutral effects are considered ‘not significant’. The effects can be either adverse or beneficial.

Table 9-4 Significance of effect matrix

		Impact magnitude				
		Major	**Moderate**	**Minor**	**Negligible**	**No Change**
Resource Importance	**International or European importance**	Very large	Large or very large	Moderate or large	Slight	Neutral
	UK or National importance	Large of very large	Moderate or large	Slight or moderate	Slight	Neutral
	Regional importance	Moderate or large	Moderate	Slight	Neutral or slight	Neutral
	County or equivalent authority importance	Slight or moderate	Slight	Neutral or slight	Neutral or slight	Neutral
	Local	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

10. Landscape and Visual Amenity

10.1. Assessment Methodology and Study Area

10.1.1. As a matter of best practice, the Landscape and Visual Impact Assessment (LVIA) will be undertaken using a methodology developed from the Landscape Institute and Institute of Environmental Management Guidelines for Landscape and Visual Impact Assessment (GLVIA 3rd Edition; 2013)[12].

10.1.2. GLVIA3 states that:

"LVIA must address both effects on landscape as a resource in its own right and effects on views and visual amenity...An assessment of landscape effects should consider how the proposal will affect the elements that make up the landscape, its aesthetic and perceptual aspects, its distinctive character and the key characteristics that contribute to this. An assessment of visual effects deals with the effects of change and development on the views available to the people and their visual amenity."

10.1.3. Judging landscape and visual effects requires methodical consideration of each effect identified and assessment of the sensitivity of the landscape and visual receptors and the magnitude of the effect on the landscape.

10.1.4. A review of baseline information to inform the landscape and visual context, including analysis of the planning framework, statutory designations using variety of information sources i.e.: the Department for Environment Food and Rural Affairs (DEFRA) MAGIC website[13] and relevant local planning authority documents will be undertaken to inform the assessment of effects.

10.1.5. The topography of the Site and wider area is relatively flat, as such a study area of 1 km is deemed appropriate as significant effects beyond this are highly unlikely.

10.2. Assessment of Sensitivity (Value)

10.2.1. The "LVIA must address both effects on landscape as a resource in its own right and effects on views and visual amenity...An assessment of landscape effects should consider how the proposal will affect the elements that make up the landscape, its aesthetic and perceptual aspects, its distinctive character and the key characteristics that contribute to this....An assessment of visual effects deals with the effects of change and development on the views available to the people and their visual amenity."

10.2.2. The GLVIA notes that "the determination of the sensitivity of the landscape resource is based upon an evaluation of each key element or characteristic of the landscape likely to be affected. The evaluation will reflect such factors as its quality, value, contribution to landscape character, and the degree to which the particular element or characteristic can be replaced or substituted. Each visual receptor, meaning the particular person or group of people likely to be affected at a specific viewpoint, should be assessed in terms of both

[12] IEMA Guidelines for Landscape and Visual Impact Assessment (GLVIA3). (April 2013 (third edition)).
[13] Multi–Agency Geographic Information for the Countryside. Magic Map Application. Available online at: https://magic.defra.gov.uk/MagicMap.aspx

their susceptibility to change in views and visual amenity and also the value attached to particular views."

10.2.3. Relative sensitivity will be assessed on a three-point scale as noted in Table 10-1 below.

Table 10-1 Sensitivity Rating

Sensitivity Rating		
Rating	**Landscape Sensitivity**	**Sensitivity of visual receptors**
High	Landscapes of high national importance containing distinctive features/elements with limited ability to accommodate change without incurring substantial loss/gain .	Occupiers of residential properties Recreational users or tourists whose attention may be focussed on the landscape Designated or protected views
Medium	Local landscape areas or receptors of low to medium importance with ability to accommodate change.	People travelling through the landscape People staying in hotels and healthcare institutions
Low	The key characteristics of the landscape are generally robust and the landscape able to accommodate the change.	People at work and in educational institutions People engaged in formal sports activities

10.3. Magnitude of Impact

10.3.1. GLVIA3 states, that "each of the impacts identified needs to be evaluated in terms of its size or scale, the geographical extent of the area influenced, and its duration and reversibility."

10.3.2. The impact of the Proposed Development upon the landscape character and for identified visual receptors will be assessed considering both the construction and operational phases, during both winter and summer to account for additional screening in summer months.

10.3.3. Consideration will also be given to the residual impact following establishment and growth of planting proposed as part of the Proposed Development landscape. The magnitude of impact is assessed taking account of the scale, extent and duration of any change.

10.3.4. The magnitude of impact will be rated using the guideline definitions in Table 10-2 below.

Table 10-2 Magnitude of Impact Rating

Rating	Landscape Impacts	Visual Impacts
High	Total loss or major alteration to key characteristics of the character and/or setting of the character area. Introduction of elements that substantially alter the character or tranquillity of the area.	Total loss or alteration to key aspects of view. Addition of new features that are highly visible, incongruous or in close proximity.
Medium	Partial loss or alteration to key characteristics of the character and/or setting of the character area. Introduction of elements that noticeably alter the character or tranquillity of the area.	Partial loss or alteration to key aspects of view. Addition of new features that are highly visible, though in keeping with the existing view, or viewed in middle ground /partially screened/viewed obliquely.
Low	Minor loss or alteration to characteristics of the character and/or setting of the character area. Introduction of elements that discernibly alter the character or tranquillity of the area.	Minor loss or alteration to key aspects of view. Addition of new features that are visible, though in keeping with the existing view. Changes to background of view or largely filtered/screened or viewed obliquely.
Negligible	Very minor loss or alteration to characteristics of the character and/or setting of the character area. Introduction of elements that make no perceptible change to the character or tranquillity of the area.	Very minor loss or alteration to key aspects of view. Addition of new features that are inconspicuous and in keeping with the existing view. Changes to background of view or seen as inconspicuous element in wide panorama. Almost entirely filtered/screened.

10.4. Significance of Effect

10.4.1. The significance of effect on the landscape is defined as the extent of physical changes and subsequent impacts on the landscape and the perception of how the landscape types/sub-types would be affected or whether new ones are established.

10.4.2. The significance of visual effect is defined as the extent of change to the existing view.

10.4.3. Such changes may be beneficial (i.e. improve or enhance the character or view) or adverse (i.e. detract from or deteriorate the character or view).

10.4.4. The significance of landscape and visual effects of the Proposed Development is derived by assessing the sensitivity of the landscape or visual receptor against the magnitude of impact, using the guidance matrix in Table 10-3 below.

Table 10-3 Significance of Effect Matrix

	Sensitivity		
Magnitude	**High**	**Medium**	**Low**
High	Major	Major/Moderate	Moderate/Minor
Medium	Major/Moderate	Moderate	Moderate/Minor
Low	Moderate/Minor	Minor	Minor/Negligible
Negligible	Minor/Negligible	Minor/Negligible	Negligible

10.4.5. Major effects are generally considered to be significant, moderate effects may be considered significant, minor or negligible and are generally not considered to be significant.

10.4.6. Note that all ratings are a guideline only and professional judgement with reasoning will be undertaken by the assessor.

11. Historic Environment and Archaeology

11.1. Assessment Methodology

11.1.1. The assessment will be undertaken in accordance with the following guidance:

- Ministry for Housing, Communities and Local Government, 2019, National Planning Practice Guidance: Historic Environment (NPPG).[14]
- Historic England, 2008, Conservation Principles, Policies, and Guidance.[15]
- Historic England, 2015, Managing significance in decision-taking in the historic environment, Historic Environment Good Practice Advice in Planning Note 2.[16]
- Historic England, 2016, Preserving Archaeological Remains, Decision-making for Sites under Development.[17]
- Historic England, 2017, The Setting of Heritage Assets Historic Environment Good Practice Advice in Planning Note 3.[18]
- Chartered Institute for Archaeologists, 2020, Standards and Guidance for Commissioning Work or Providing Consultancy Advice on Archaeology and the Historic Environment.[19]
- Chartered Institute for Archaeologists, 2020, Standards and Guidance for Historic Environment Desk-Based Assessments.[20]
- Chartered Institute for Archaeologists, 2021, Regulations for Professional Conduct.[21]

11.1.2. The construction of the Proposed Development has the potential to impact on the heritage assets within the study area in the following ways:

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[14] Ministry for Housing, Communities and Local Government - National Planning Practice Guidance: Historic Environment (July 2019). Available online at: https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment

[15] Historic England - Conservation Principles, Policies and Guidance (April 2008. Available online at: Conservation Principles, Policies and Guidance | Historic England

[16] Historic England - Managing significance in decision-taking in the historic environment, Historic Environment Good Practice Advice in Planning Note 2 (March 2015). Available online at Managing Significance in Decision-Taking in the Historic Environment

[17] Historic England - Preserving Archaeological Remains, Decision-making for Sites under Development (November 2016). Available online at: Preserving Archaeological Remains | Historic England

[18] Historic England - The Setting of Heritage Assets Historic Environment Good Practice Advice in Planning Note 3 (2017). Available online at: The Setting of Heritage Assets | Historic England

[19] The Chartered Institute for Archaeologists - Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment (October 2020). Available online at: https://www.archaeologists.net/sites/default/files/2023-11/CIfA-SandG-Archaeological-Consultancy-2020.pdf

[20] The Chartered Institute for Archaeologists - Standard and guidance for historic environment desk-based assessment (October 2020). Available online at: https://www.archaeologists.net/sites/default/files/2023-11/CIfA-SandG-DBA-2020.pdf

[21] The Chartered Institute for Archaeologists - Regulations for Professional Conduct (July 2021). Available online at: https://www.archaeologists.net/sites/default/files/2024-11/CIfA-Regulations-for-Professional-Conduct-2024.pdf

- Temporary impacts arising from enabling works associated with the construction of the Proposed Development. This could result in a temporary change to the setting of the designated and non-designated assets identified in the study area, which in turn would result in a temporary impact on their overall sensitivity (value).
- Impacts instigated by the construction works, such as excavations and earthworks, as well as temporary works such as construction of compounds, storage areas, and road diversions, have the potential to result in permanent effects on the physical impacts of non-designated heritage assets through the truncation or removal of known archaeological remains and as well as as-yet unknown archaeology, and through changes to the setting of heritage assets.

11.1.3. Based on currently available information on the Proposed Development, there is the potential for operational effects resulting from the operation of the completed development, such as traffic, noise, and lighting. These operational impacts could result in a permanent change to the setting of the designated and non-designated heritage assets due to the presence and operation of the completed development. This could, in turn, have an impact on the overall sensitivity (value) of these assets.

11.1.4. The operation of the Scheme is not expected to have further impacts on subsurface archaeological remains, as construction activities would result in the removal of those remains.

11.1.5. Due to the potential for significant effects during the construction and operation phases of the Proposed Development, it is proposed that assessment of the historic environment, comprising archaeological remains, built heritage assets, and the historic landscape, is scoped into the EIA and considered for construction and operation impacts. In accordance with the requirements of the NPPF (2025), the assessment for the historic environment will be proportionate to the assets' importance (value) and no more than is sufficient to understand the potential impact of the Proposed Development on their value. The impacts and effects identified during the assessment will be used to inform the identification of level of harm under National Policy Statement EN-1[22].

11.2. Study Area

11.2.1. The study area for the Environmental Impact Assessment (EIA) will be defined as a 1 km buffer extending from the boundary of the Proposed Development. Dependent upon the final design of the Proposed Development, there may be the potential for impacts on the setting of designated assets beyond this area. These would be identified through a Site walkover and a review of the Zone of Theoretical Visibility (ZTV) should this be undertaken for the ES assessment and included in the baseline. At this stage, a ZTV has not been produced; however, the potential exists for additional heritage assets and historic landscape features, both within and outside of the study area to be scoped into the ES assessment.

11.2.2. The high-level desk-based study produced as part of this Scoping Report will be updated to determine baseline conditions and inform the updated assessments of value. This assessment will build upon information previously gathered for the Proposed Development and will include an inspection of documentary sources and Site data held by Cheshire Historic Environment Record HER. The initial baseline conditions for the historic

[22] Department for Energy Security & Net Zero (2025). Overarching National Policy Statement for Energy (EN-1) [online]. Available at: EN-1 Overarching National Policy Statement for Energy

environment would be presented in the form of a Desk-based Assessment (DBA) following the standards set by the Chartered Institute for Archaeology (CIfA)[23].

11.2.3. The methodology for assessment of value, magnitude of impact, and significance of effect has been developed, based upon the guidance provided in LA104[24] and LA106[25] of the Design Manual for Roads and Bridges (DMRB) and used as an industry standard.

11.3. Assessment of Sensitivity (Value)

11.3.1. Assessment of the value of heritage assets will be informed by the findings of the desk-based study and undertaken in accordance with the methodology set out in Table 11-1 below. Assessment of the potential for unknown archaeological remains will also be undertaken.

11.3.2. Archaeological investigations may be required to inform the EIA. These investigations may include non-intrusive surveys such as geophysical surveys and/or intrusive investigations in the form of evaluation trenching in order to inform the assessment of sensitivity (value) for known and as-yet unknown buried archaeological remains. The DBA will inform the need for and type of further investigations to be recommended at the assessment stage.

[23] Chartered Institute for Archaeologists, 2014 (last updated October 2020), Standard and Guidance for Historic Environment Desk-Based Assessment. Available online at: *CIfA-SandG-DBA-2020.pdf*

[24] Highways England. (2020). *Design Manual for Roads and Bridges: LA 104 Environmental assessment and monitoring* (Revision 1). Available online at: Standards For Highways

[25] Department for Transport. (2020). *LA 106 – Cultural heritage assessment* (Design Manual for Roads and Bridges, Sustainability & Environment, Lifecycle Stage: Appraisal, Rev. 1). Standards for Highways. Available online at: Standards For Highways

Table 11-1 Criteria for assessment of sensitivity (value) of heritage assets

Value	Criteria
Very High	World Heritage Sites Assets of acknowledged international importance Historic landscapes recognised as being of international importance Assets that can contribute to acknowledged international research objectives
High	Scheduled Monuments or archaeological sites of schedulable quality Grade I and II* Listed Buildings Conservation areas with high concentrations of designated heritage assets or undesignated assets of national importance Grade I & II* Registered Parks and Gardens Designated Wreck Sites Undesignated heritage assets of national importance Undesignated historic landscapes of outstanding interest and national importance Battlefields included on the Register of Historic Battlefields Assets that can contribute to acknowledged national research objectives
Medium	Grade II Listed Buildings Grade II Registered Parks and Gardens Conservation areas with undesignated assets of regional importance Archaeological notification areas Undesignated heritage assets of regional importance (including archaeological sites and wreck sites) Undesignated historic landscapes of regional importance Assets that can contribute to acknowledged regional research objectives
Low	Locally designated heritage assets such as locally listed buildings Undesignated heritage assets of local importance (including archaeological sites and wreck sites) Historic landscapes of local importance
Negligible	Undesignated buildings, archaeological sites and historic landscapes with little or no importance historic interest Highly degraded heritage assets that no longer warrant designation or have lost their historic interest
Unknown	The importance of a historic asset cannot be ascertained at this time (e.g., potential areas of archaeological remains)

11.4. Magnitude of Impact

11.4.1. Magnitude of impact will be assessed on a five-point scale of major, moderate, minor, negligible, and no change, applied equally to adverse and beneficial impacts in accordance with the criteria set out in Table 11-2 below.

Table 11-2 Criteria for assessment of impact magnitude

Impact Magnitude	Criteria
Major adverse	Substantial harm to, or loss of an asset's value as a result of changes to its physical form or setting. For example, this would include demolition, removal of physical attributes critical to an asset, loss of all archaeological interest, or the transformation of an asset's setting in a way that fundamentally compromises its ability to be understood or appreciated. The scale of change would be such that it could result in a designated asset being undesignated or having its level of designation lowered.
Moderate adverse	Less than substantial harm to an asset's value as a result of changes to its physical form or setting. For example, this could include: physical alterations that remove or alter some elements of value, but do not substantially alter the overall value of the asset; notable alterations to the setting of an asset that affect our appreciation of it and its value; or the unrecorded loss of archaeological interest.
Minor adverse	Limited harm to an asset's value as a result of changes to its physical form or setting. For example, this could include: physical changes that alter some elements of value but do not noticeably alter the overall value of the asset; and small-scale alterations to the setting of an asset that hardly affect its value.
Negligible	Very minor changes to archaeological materials or setting.
No change/neutral	No appreciable change to an asset's value.
Minor beneficial	Limited improvement of an asset's value as a result of changes to its physical form or setting. For example, this could include: physical changes that reveal or conserve some elements of value but do not noticeably alter the overall value of the asset; or small-scale alterations to the setting of an asset that improve our ability to appreciate it.
Moderate beneficial	Notable enhancement of an asset's value as a result of changes to its physical form or setting. For example, this could include: physical alterations that conserve or restore elements of value; notable alterations to the setting of an asset that improve our appreciation of it and its value; or changes in use that help safeguard an asset.
Major beneficial	Substantial enhancement of an asset's value as a result of changes to its physical form or setting. For example, this could include: major changes that conserve or restore elements of high value; alterations to the setting of an asset that very substantially improve our appreciation of it and its value; or changes in use that safeguard an asset, e.g., by taking it off the At Risk Register.

11.5. Significance of Effect

11.5.1. Significance of effect is a function of asset value and impact magnitude and will be assessed using professional judgement informed by the matrix set out in DMRB LA 104, as shown in Table 11-3 below.

Table 11-3 Significance matrix

		Magnitude of impact/risk				
		No change	**Negligible**	**Minor**	**Moderate**	**Major**
Receptor Sensitivity	**Very high**	Neutral	Slight	Moderate or large	Large or very large	Very large
	High	Neutral	Slight	Moderate or slight	Moderate or large	Large or very large
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Moderate or slight
	Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

12. Water Environment and Flood Risk

12.1. Assessment Methodology and Study Area

12.1.1. The study area for water environment and flood risk takes into consideration all water features and associated floodplain physically impacted by the Proposed Development and those watercourses in direct hydraulic connectivity within 1 km of the Site Boundary. A 1 km buffer around the Site was selected as professional judgement and understanding of the local watercourse connectivity considers 1 km to be an appropriate distance for any significant effects unlikely to be identified beyond this point (for example, dilution of pollutants).

12.1.2. Information for the baseline conditions will be collected from a detailed desk-based study, a Site visit and consultation with relevant stakeholders.

12.1.3. The following sources of information will be used to inform the assessment:

- Ordnance Survey (OS) OpenData[26];
- The EA website[27];
- The EA Flood Map for Planning website[28];
- The Flood Mapping Service (rivers/sea, surface water, reservoirs) website[29];
- The EA Catchment Data Explorer website[30];
- Multi-Agency Geographic Information for the Countryside (MAGIC) Map[13];
- Groundsure's Enviro Insight Report;
- British Geological Survey (BGS) Geology of Britain viewer map[31];
- The EA Water Quality Data archive website[32];
- Online historic mapping resources, e.g. National Library of Scotland (NLS[33]); and
- High-resolution aerial photography, e.g. Google Earth.

12.1.4. The water environment covers water quality, hydrology, flood risk and groundwater.

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[26] Ordnance Survey, Open Data. Available online at: https://osdatahub.os.uk/downloads/open
[27] Environment Agency. Available online at: Environment Agency - GOV.UK
[28] GOV.UK Flood Risk Information for Planning in England. Available online at: Get flood risk information for planning in England - Flood map for planning - GOV.UK
[29] GOV.UK Check the long term flood risk for an area in England. Available online at: Check the long term flood risk for an area in England - GOV.UK
[30]Environment Agency– Explore Catchment Data. Available online at: https://environment.data.gov.uk/catchment-planning/
[31] British Geological Survey – Geology Viewer. Available online at: BGS Geology Viewer - British Geological Survey
[32] Environment Agency – Water Quality data Archive. Available online at: Open WIMS data
[33] National Library of Scotland. Available online at: https://maps.nls.uk/

12.1.5. The method of assessment and reporting of significant effects will be predominantly qualitative based on the steps set out below:

- Categorisation of importance (sensitivity) of receptor (Table 12-1)
- Categorisation of magnitude of the impact (Table 12-2) and,
- Assessment of the significance of the effect based on the importance of the receptor and magnitude of the impact (Table 12-3).

12.1.6. Estimation of importance of the receptor will be based on the data collected as part of the baseline study, taking into consideration designations, publicly available data, Site walkovers and consultations with stakeholders. Estimation of magnitude of impacts is a primarily semi-qualitative description based on professional judgement.

12.1.7. This assessment will consider the following water environment technical areas; water quality, flood risk, hydromorphology and groundwater and the likely significant effects associated with the Proposed Development on identified receptors. An overall assessment is based on the water environment technical area with the most adverse significant effect resulting from construction and operational activity. This approach aims to highlight the impact on the water receptor as a whole rather than from one technical area.

12.2. Assessment of Sensitivity (Value)

Table 12-1 Criteria for determining the importance for water environment receptors

Receptor importance	Receptor	Typical examples
Very High	Surface water	• Nationally significant attribute of high importance. • Watercourse having a Water Framework Directive (WFD) classification shown in a RBMP and a Q95 ≥ 1.0 m^3/s. • Site protected / designated under European Commission (EC) or UK legislation (Special Area of Conservation (SAC), Special Protection Area (SPA), Site of Special Scientific Interest (SSSI), Ramsar site, salmonid water) / Species protected by EC legislation LA 108.
	Flood risk	• Essential infrastructure, for example: essential transport routes including mass evacuation routes, or essential utility infrastructure. • Highly vulnerable development, for example: police and ambulance stations, basement dwellings or caravan park intended for permanent residential use.
	Groundwater	• Principal aquifer providing a regionally important resource and/or supporting a site protected under EC and UK legislation LA 108. • Groundwater locally supports groundwater dependent terrestrial ecosystem (GWDTE). • Source Protection Zone 1 (SPZ1).
High	Surface water	• Locally significant attribute of high importance. • Watercourse having a WFD classification shown in a RBMP and a Q95 < 1.0 m3/s. • Species protected under EC or UK legislation LA 108.

Receptor importance	Receptor	Typical examples
	Flood risk	• Move vulnerable development, for example: Hospitals, dwellings, or landfill and waste management sites.
	Groundwater	• Principal aquifer providing locally important resource or supporting a river ecosystem. • Groundwater locally supports GWDTE • SPZ2.
Medium	Surface water	• Watercourse/ attribute of moderate quality or rarity • Watercourse not having a WFD classification shown in a RBMP and a Q95 > 0.001 m3/s
	Flood risk	• Less vulnerable development, for example: Commercial buildings, agricultural buildings, or water / sewerage treatment works.
	Groundwater	• Aquifer providing water for agricultural or industrial use with limited connection to surface water. • SPZ3.
Low	Surface water	• Watercourse with a lower quality. • Watercourse not having a WFD classification shown in a RBMP and a Q95 ≤ 0.001 m3/s.
	Flood risk	• Water compatible development, for example: flood defences, water transmission infrastructure, or amenity open space.
	Groundwater	• Unproductive strata

12.3. Magnitude of Impact

Table 12-2 Methodology for assessing magnitude of impact

Magnitude of impact	Criteria	Typical example	
Major adverse	Results in loss of attribute and/or quality and integrity of the attribute.	Surface water:	• Loss or extensive change to a fishery. • Loss of regionally important public water supply. • Loss or extensive change to a designated nature conservation site. • Reduction in water body WFD classification. • The required pollution hazard indices in the CIRIA simple index approach are not met for Total Suspended Solids (TSS), metals and hydrocarbons.
		Flood risk:	• Increase in peak flood level (>100 mm).
		Ground water:	• Loss of, or extensive change to, an aquifer. • Loss of regionally important water supply. • Potential high risk of pollution to groundwater from routine runoff - risk score >250 (Groundwater quality and runoff assessment).

Magnitude of impact	Criteria	Typical example	
			• Calculated risk of pollution from spillages ≥2% annually (Spillage assessment). • Loss of, or extensive change to GWDTE or baseflow contribution to protected surface water bodies. Reduction in water body WFD classification. • Loss or significant damage to major structures through subsidence or similar effects.
Moderate adverse	Results in effect on integrity of attribute, or loss of part of attribute.	Surface water:	• Partial loss in productivity of a fishery. • Degradation of regionally important public water supply or loss of major commercial/ industrial/ agricultural supplies. • Contribution to reduction in water body WFD classification. • The required pollution hazard indices in the CIRIA simple index approach are not met for two of TSS, metals or hydrocarbons.
		Flood risk:	• Increase in peak flood level (>50 mm).
		Ground water:	• Partial loss or change to an aquifer. • Degradation of regionally important public water supply or loss of significant commercial/ industrial/ agricultural supplies. • Potential medium risk of pollution to groundwater from routine runoff - risk score 150-250. • Calculated risk of pollution from spillages ≥1% annually and <2% annually. • Partial loss of the integrity of GWDTE. • Contribution to reduction in water body WFD classification. • Damage to major structures through subsidence or similar effects or loss of minor structures.
Minor adverse	Results in some measurable change in attributes, quality or vulnerability.	Surface water:	• Minor effects on water supplies. • The required pollution hazard indices in the CIRIA simple index approach are not met for one of TSS, metals or hydrocarbons.
		Flood risk:	• Increase in peak flood level (>10 mm).
		Ground water:	• Potential low risk of pollution to groundwater from routine runoff - risk score <150 • Calculated risk of pollution from spillages ≥0.5% annually and <1%annually. • Minor effects on an aquifer, GWDTEs, abstractions and structures.

Magnitude of impact	Criteria	Typical example	
Negligible	Results in effect on attribute, but of insufficient magnitude to affect the use or integrity.	Surface water:	• The required pollution hazard indices in the CIRIA simple index approach for TSS, metals and hydrocarbons are met.
		Flood risk:	• Negligible change to peak flood levels (+/-10 mm).
		Ground water:	• No measurable impact upon an aquifer and/or groundwater receptors and risk of pollution from spillages <0.5%.
Minor beneficial	Results in some beneficial effect on attribute or a reduced risk of negative effect occurring.	Surface water:	• Improvement from a baseline where one of TSS, metals or hydrocarbons were not meeting the required pollution hazard index in the CIRIA simple index approach.
		Flood risk:	• Creation of flood storage and decrease in peak flood level (>10 mm).
		Ground water:	• Calculated reduction in existing spillage risk by 50% or more to an aquifer (when existing spillage risk <1% annually). • Reduction of groundwater hazards to existing structures. • Reductions in waterlogging and groundwater flooding.
Moderate beneficial	Results in moderate improvement of attribute quality.	Surface water:	• Contribution to improvement in water body WFD classification. • Improvement from a baseline where two of TSS, metals or hydrocarbons were not meeting the required pollution hazard indices in the CIRIA simple index approach.
		Flood risk:	• Creation of flood storage and decrease in peak flood level (>50 mm).
		Ground water:	• Calculated reduction in existing spillage risk by 50% or more (when existing spillage risk is >1% annually). • Contribution to improvement in water body WFD classification. • Improvement in water body catchment abstraction management Strategy (CAMS) (or equivalent) classification. • Support to significant improvements in damage GWDTE.
Major beneficial	Results in major improvement of attribute quality.	Surface water:	• Improvement in water body WFD classification. • Improvement from a baseline where all three of TSS, metals or hydrocarbons were not meeting the required pollution hazard indices in the CIRIA simple index approach.

Magnitude of impact	Criteria	Typical example	
		Flood risk:	• Creation of flood storage and decrease in peak flood level (>100 mm).
		Ground water:	• Removal of existing polluting discharge to an aquifer or removing the likelihood of polluting discharges occurring. • Recharge an aquifer. • Improvements in water body WFD classification.
No change			No loss or alteration of characteristics, features or elements; no observable impact in either direction.

12.4. Significance of Effect

Table 12-3 Significance of effect matrix

		Magnitude of impact				
		Major	**Moderate**	**Minor**	**Negligible**	**No change**
Receptor value (importance)	**Very High**	Very large	Large or very large	Moderate or large	Slight	Neutral
	High	Large or very large	Moderate or large	Slight or moderate	Slight	Neutral
	Medium	Moderate or large	Moderate	Slight	Neutral or slight	Neutral
	Low	Slight or moderate	Slight	Neutral or slight	Neutral or slight	Neutral
	Negligible	Slight	Neutral or slight	Neutral or slight	Neutral	Neutral

12.4.1. This chapter will have a further two associated standalone assessments, which will be provided as appendices:

- Flood Risk Assessment (FRA) (Level 3)[34]; and
- WFD Compliance Assessment.

12.4.2. Methodologies for these standalone assessments are also provided within this topic chapter and the results will feed into the overall impact assessment.

12.4.3. The Geology, soils and land contamination chapter and the Biodiversity chapter will also be used to inform the assessment.

[34] Level 3 FRA (Detailed Study): Undertaken if quantitative analysis is required to assess flood risk issues related to the development site. This may include detailed hydraulic modelling of rivers or drainage systems.

12.5. Water Framework Directive Assessment

12.5.1. The overall aim of the WFD compliance assessment is to identify and assess potential impacts of the Proposed Development upon the water environment, and to determine if the Proposed Development is compliant with WFD legislation. Where appropriate, this WFD assessment also identifies mitigation measures (both embedded into the design and site-specific) to ensure no deterioration to any WFD surface water body or groundwater body.

12.5.2. The WFD assessment follows guidance produced by The Planning Inspectorate (PINS) in Advice Note 18 on the Water Framework Directive (PINS, 2017[35]). This includes three phases of work:

- Stage 1 (WFD Screening);
- Stage 2 (WFD Scoping); and
- Stage 3 (WFD Impact Assessment).

12.5.3. Stage 1 (WFD Screening) will include a desk-based study to consider activities associated with the Proposed Development and the identification of water receptors which have the potential to be affected by the Proposed Development. A more detailed desk-study will be undertaken at Stage 2 (WFD Scoping) to review the baseline characteristics of the identified WFD surface and groundwater bodies (e.g. examination of aerial photography and old maps, review of EA WFD, fisheries, and water quality data), and also to consider the potential risks from the Proposed Development to water receptors. If stage 2 identifies any risk to the scoped water bodies, the Stage 3 (WFD Impact Assessment) will be conducted, This will comprise:

- Field surveys by experienced geomorphologists and aquatic ecologists to further assess the character of watercourses potentially impacted by the scheme;
- Identification of specific works associated with the scheme and which receptor(s) may be impacted;
- A thorough matrix-based approach WFD impact assessment for each quality element within each individual WFD water body with the potential to be impacted by the scheme;
- Identification of site-specific mitigation measures required as a result of the scheme; and
- Synthesis of all assessments to assess the cumulative impact of the scheme on potentially affected WFD water bodies in order to determine compliance of the scheme with WFD legislation.

12.5.4. Consultation with key stakeholders (EA, and the Lead Local Flood Authority (LLFA)) will be undertaken throughout the WFD compliance assessment process.

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[35] Planning Inspectorate (PINS), 2017. Advice Note 18: The Water Framework Directive. Available from: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2017/06/advice_note_18.pdf

13. Geology, Hydrogeology and Soils

13.1. Study Area

13.1.1. To consider the effects associated with land contamination, the study area includes the Site and the area of land immediately beyond the Site to a distance of up to 250 m (off-Site).

13.1.2. The study area for effects associated with soils and agricultural land is the Site Boundary.

13.2. Land Contamination

13.2.1. The assessment of land contamination will follow the DMRB LA 109 guidance[36]. A desk study report has been completed for the Proposed Development[37] to include a compilation of baseline data and a land contamination risk assessment. The desk study will be used to inform the baseline information for ES.

13.2.2. The land contamination risk assessment will be undertaken in accordance with the Environment Agency (EA) Land Contamination Risk Management Guidance (LCRM)[38]. LCRM provides a technical framework to appraise the potential risks to the identified potential human, environmental and property receptors from potential contaminants in soil and groundwater through the application of a risk management process. A tiered approach is taken:

- The first tier identifies potential contaminant linkages through completion of a desk based preliminary risk assessment (PRA) and conceptual site model (CSM); and
- The second assessment tier comprises consideration of site-specific data, such as that obtained from ground investigation, which may be a recommendation in the desk study. A generic quantitative risk assessment (GQRA) would be undertaken using Generic Assessment Criteria (GACs) that represent 'minimal' or 'tolerable' risk.

13.2.3. The results of the PRA and/or GQRA would be used to inform the land contamination impact assessments for the ES, to assess potential effects from contamination on human health, surface water and groundwater.

13.2.4. The land contamination impact assessment will be undertaken using the methodology outlined in the following sections.

Assessment of Sensitivity (Value)

13.2.5. A sensitivity/value will be assigned to each receptor using the criteria detailed in Table 13-1. For human health receptors, DMRB LA 109[36] has been used to define the receptor value.

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[36] National Highways, DMRB Manual: LA 109 Geology and Soils – (Revision 0, 2019). Available online at: LA 109 - Geology and soils

[37] AtkinsRealis, July 2025, Project Salinae Hydrogen Storage Pre-Feed Geotechnical Desk Study. Ref. 100117376-ATR-ZZ-ZZ-TREP-C-002.

[38] Environment Agency, Land Contamination Risk Management (LCRM), 2023. Available online at: Land contamination risk management (LCRM) - GOV.UK

For surface water and groundwater receptors, DMRB LA 113[39] Road Drainage and the Water Environment has been used.

Table 13-1 Environmental value (sensitivity) and typical description – land contamination

Receptor Value (Sensitivity)	Description
Human Health	
Very High	Very high sensitivity land use such as residential or allotments
High	High sensitivity land use such as public open space
Medium	Medium sensitivity land use such as commercial or industrial
Low	Low sensitivity land use such as highways and rail
Negligible	Undeveloped surplus land / no sensitive land use proposed
Groundwater	
Very High	Principal aquifer providing a regionally important resource and/or supporting a site protected under EC and UK legislation LA 1089 Groundwater locally supports Groundwater Dependant Terrestrial Ecosystems (GWDTE) Groundwater Source Protection Zone (SPZ 1) – Inner Catchment
High	Principal aquifer providing locally important resource or supporting a river ecosystem. Groundwater supports a GWDTE Groundwater SPZ 2 – Outer Catchment
Medium	Aquifer providing water for agricultural or industrial use with limited connection to surface water Groundwater SPZ 3 – Total Catchment
Low	Unproductive strata
Negligible	N/A
Surface Water	
Very High	Watercourse having a Water Framework Directive classification shown in a River Basin Management Plan (RBMP) and Q95 ≥ 1.0 m3/s. Site protected/designated under European Commission (EC) or UK legislation (Special Area of Conservation, SPA, SSSI Ramsar site, salmonid water) / Species protected by EC legislation LA 10820
High	Watercourse having a WFD classification shown in a RBMP and Q95 <1.0m3/s. Species protected under EC or UK legislation LA 10820
Medium	Watercourses not having a WFD classification shown in a RBMP and Q95 >0.001m^3/s

[39] National Highways, DMRB Manual: LA 113 Road Drainage and the Water Environment – (Revision 1, 2020). Available online at: LA 113 - Road drainage and the water environment

Receptor Value (Sensitivity)	Description
Low	Watercourses not having a WFD classification shown in a RBMP and Q95 ≤0.001m^3/s
Negligible	N/A

Magnitude of Impact

13.2.6. Following determination of the value/sensitivity of the receptors, the magnitude of potential impacts is determined. The criteria for the assessment of impact magnitude are set out in Table 13-2.

Table 13-2 Magnitude of impact and typical descriptions – land contamination

Magnitude of Impact (change)	Description
Human Health	
Major	Significant contamination identified. Contamination levels significantly exceed background levels and relevant screening criteria with potential for significant harm to human health. Contamination heavily restricts future use of land.
Moderate	Contaminant concentrations exceed background levels and are in line with limits of relevant screening criteria. Significant contamination can be present. Control / remediation measures are required to reduce risks to human health / make land suitable for intended use.
Minor	Contaminant concentrations are below relevant screening. Significant contamination is unlikely with a low risk to human health. Best practice measures can be required to minimise risks to human health.
Negligible	Contaminant concentrations substantially below levels outlined in relevant screening criteria. No requirement for control measures to reduce risks to human health / make land suitable for intended use.
No change	Reported contaminant concentrations below background levels.
Groundwater	
Major adverse	Loss of, or extensive change to, an aquifer. Loss of regionally important water supply. Potential high risk of pollution to groundwater from routine runoff - risk score >250 (groundwater quality and runoff assessment). Calculated risk of pollution from spillages ≥2% annually (spillage assessment). Loss of, or extensive change to GWDTE or baseflow contribution to protected surface water bodies. Reduction in water body WFD classification. Loss or significant damage to major structures through subsidence or similar effects.
Moderate adverse	Partial loss or change to an aquifer.

Magnitude of Impact (change)	Description
	Degradation of regionally important public water supply or loss of significant commercial/ industrial/ agricultural supplies. Potential medium risk of pollution to groundwater from routine runoff – risk score 150-250. Calculated risk of pollution from spillages ≥1% annually and <2% annually. Partial loss of the integrity of GWDTE. Contribution to reduction in water body WFD classification. Damage to major structures through subsidence or similar effects or loss of minor structures.
Minor adverse	Potential low risk of pollution to groundwater from routine runoff - risk score <150. Calculated risk of pollution from spillages ≥0.5% annually and <1% annually. Minor effects on an aquifer, GWDTEs, abstractions and structures.
Negligible	No measurable impact upon an aquifer and/or groundwater receptors and risk of pollution from spillages <0.5%.
Minor beneficial	Calculated reduction in existing spillage risk by 50% or more to an aquifer (when existing spillage risk <1% annually). Reduction of groundwater hazards to existing structures. Reductions in waterlogging and groundwater flooding.
Moderate beneficial	Calculated reduction in existing spillage risk by 50% or more (when existing spillage risk is >1% annually). Contribution to improvement in water body WFD classification. Improvement in water body catchment abstraction management Strategy (CAMS) (or equivalent) classification. Support to significant improvements in damaged GWDTE.
Major beneficial	Removal of existing polluting discharge to an aquifer or removing the likelihood of polluting discharges occurring. Recharge of an aquifer. Improvement in water body WFD classification.
No change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.
Surface Water	
Major adverse	Failure of both acute-soluble and chronic-sediment related pollutants in HEWRAT and compliance failure with Environmental Quality Standard (EQS) values. Calculated risk of pollution from a spillage ≥2% annually (spillage assessment). Loss or extensive change to a fishery. Loss of regionally important public water supply. Loss or extensive change to a designated nature conservation site. Reduction in water body WFD classification.

Magnitude of Impact (change)	Description
Moderate adverse	Failure of both acute-soluble and chronic-sediment related pollutants in Highways England Water Risk Assessment Tool the Highways England Water Risk Assessment Tool (HEWRAT) but compliance with EQS values. Calculated risk of pollution from spillages ≥1% annually and <2% annually. Partial loss in productivity of a fishery. Degradation of regionally important public water supply or loss of major commercial/industrial/agricultural supplies. Contribution to reduction in water body WFD classification.
Minor adverse	Failure of either acute soluble or chronic sediment related pollutants in HEWRAT. Calculated risk of pollution from spillages ≥0.5% annually and <1% annually. Minor effects on water supplies.
Negligible	No risk identified by HEWRAT (pass both acute-soluble and chronic-sediment related pollutants). Risk of pollution from spillages <0.5%.
Minor beneficial	HEWRAT assessment of either acute soluble or chronic-sediment related pollutants becomes pass from an existing site where the baseline was a fair condition. Calculated reduction in existing spillage risk by 50% or more (when existing spillage risk is <1% annually).
Moderate beneficial	HEWRAT assessment of both acute-soluble and chronic-sediment related pollutants becomes pass from an existing site where the baseline was a fair condition. Calculated reduction in existing spillage by 50% or more (when existing spillage risk >1% annually). Contribution to improvement in water body WFD classification.
Major beneficial	Removal of existing polluting discharge or removing the likelihood of polluting discharges occurring to a watercourse. Improvement in water body WFD classification.
No change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

Significance of Effect

13.2.7. The overall significance of land contamination effects is defined using the matrix presented below in Table 13-3, as per DMRB LA 104[24], which describes the relationship between the value / sensitivity of the receptor and the magnitude (change) of the impact.

Table 13-3 Signifiance matrix – land contamination

		Magnitude of impact (degree of change)				
		No change	**Negligible**	**Minor**	**Moderate**	**Major**
Value/ Sensitivity	**Very high**	Neutral	Slight	Moderate or large	Large or very large	Very large
	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
	Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

13.3. Soils and Agricultural Land

13.3.1. The assessment of soil resources and agricultural land will follow DMRB LA 109 guidance[36]. Relevant published datasets and mapping will be reviewed to assess the receptor value.

13.3.2. No published or existing detailed soil survey data are available for the footprint of the Proposed Development. The provisional Agricultural Land Classification (ALC) mapping does not sub-divide into Subgrade 3a and Subgrade 3b. Further assessment is required to derive a definitive ALC grading for the land within the Proposed Development to determine the presence or absence of BMV agricultural land.

13.3.3. The soils and agricultural land impact assessment will be undertaken using the methodology outlined in the following sections.

Assessment of Sensitivity (value)

13.3.4. Table 13-4 describes how value (sensitivity) will be assigned to soil receptors. An agricultural soil receptor can be assigned a sensitivity value based on its ALC grade ranging from Grade 1 (Excellent) to Grade 5 (Very Poor). BMV agricultural land comprises soils graded in the ALC system as Grade 1, 2 (Very Good) and Subgrade 3a (Good)[40].

Table 13-4 Assigning receptor value (sensitivity) – soil resources and agricultural land

Receptor value (sensitivity)	Description
Very high	Land in ALC Grades 1 and 2
High	ALC Subgrade 3a
Medium	ALC Subgrade 3b
Low	ALC Grades 4 and 5
Negligible	Previously developed land formerly in hard uses with little potential to return to agriculture

Magnitude of Impact

13.3.5. Table 13-5 provides guidance on how to assign magnitude of impact to soils and agricultural land.

Table 13-5 Assigning magnitude of impact – soil resources and agricultural land

Magnitude of impact	Typical description
Major	Physical removal or permanent sealing of >20ha of agricultural land.
Moderate	Physical removal or permanent sealing of 1ha - 20ha of agricultural land. Permanent loss/reduction of one or more soil function(s) and restriction to current or approved future use (e.g. through degradation, compaction, erosion of soil resource).
Minor	Temporary loss/reduction of one or more soil function(s) and restriction to current or approved future use (e.g. through degradation, compaction, erosion of soil resource).
Negligible	No discernible loss/reduction of soil function(s) that restrict current or approved future use or permanent sealing of <1ha.
No change	No changes are anticipated for the area.

[40] Ministry of Agriculture, Fisheries and Food (MAFF), Revised guidelines and criteria for grading the quality of agricultural land. Agricultural Land Classification of England and Wales, (1988). Available online at: Agricultural Land Classification of England and Wales: Revised criteria for grading the quality of agricultural land - ALC011

Significance of Effect

13.3.6. The significance of effect on agricultural soils is determined by considering the magnitude of the impact and the value (sensitivity) of each receptor. Table 13-6 below is a reproduction of Table 3.8.1 from DMRB LA 104[24] and presents the matrix for determining the significance of an effect. The assessment of the significance of residual effects will consider possible mitigation measures.

Table 13-6 Assigning significance of effect – soil resources and agricultural land

		Magnitude of impact (degree of change)				
		No change	**Negligible**	**Minor**	**Moderate**	**Major**
Value/ sensitivity	**Very high**	Neutral	Slight	Moderate or large	Large or very large	Very large
	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
	Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

13.3.7. In line with DMRB guidance, where two potential values of significance of effect are identified using the matrix in Table 13-6, professional judgement will be used to assign the value based on understanding of details of both the magnitude of impact and value of the receptor. For example, where a minor impact is identified in relation to a receptor of high sensitivity, professional judgement will be used to determine whether this results in a slight or moderate effect.

13.3.8. In general, moderate to very large effects are to be considered significant in terms of the EIA regulations[41]. Consultation with Natural England is required to be undertaken where the Proposed Development involves the permanent loss of more than 20 hectares (ha) of BMV land and the development is not for agricultural purposes or in accordance with the provisions of a development plan.

[41] UK Government. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. March 2017. Available online at: The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

14. Noise and Vibration

14.1. Assessment Methodology and Study Area

14.1.1. The aim of the noise and vibration assessment is to identify:

- The receptors within the vicinity of the Proposed Development;
- The noise and vibration effects likely to occur as part of or due to the Proposed Development; and,
- Whether the identified noise and vibration sources pose the potential of a significant effect at sensitive receptors.

14.1.2. In order to ascertain the potential noise impact arising from the various elements of this Proposed Development, the following data sources and information (or equivalents) will be used in order to identify the study area, existing receptors and the current baseline:

- DEFRA Round 4 Noise contours and Noise Important Areas (NIAs) for England[42]
- Ordinance Survey Open Map[43]
- Google Earth[44]

14.1.3. The study area for the construction phase of the Proposed Development will be determined in accordance with BS 5228:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites[45]. BS 5228 states that calculations should be taken with caution at distances beyond 300 m therefore for construction noise, a study area of 300 m from the closest construction activity is sufficient to encompass noise sensitive receptors. Vibration levels from mobile heavy construction equipment are generally considered to be imperceptible at distances greater than around 20 m from the source. However, the drilling works have the potential to cause impacts at up to 100 m from the source, therefore for the vibration study area 100 m is considered sufficient to encompass vibration sensitive receptors. The study area for noise and vibration is shown in Appendix A, Figure 5-8.

14.1.4. The study area for the operational phase of the Proposed Development is determined based on previous experience of industrial developments with similar plant and the location of the nearest identified noise sensitive receptors. Due to the use of compressor stations, electrolysers, electrolyser cooling systems and hydrogen and oxygen vents during the operational phase a study area of 1 km from the station location is sufficient to encompass noise sensitive receptors. Vibration levels from the compressor station and plant associated with the low carbon hydrogen production plant (LCHPP) are anticipated to be minimal and therefore have been scoped out of the environmental assessment.

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[42] Explaining the 2022 noise maps (October 2024 (Round 4)). Available online at: Explaining the 2022 noise maps - GOV.UK

[43] OS OpenMap – Local (October 2025). Available online at: OS Data Hub

[44] Google Earth (2025). Available online at: https://maps.app.goo.gl/LxjR9bQUanmQ7dzZ9

[45] British Standards Institution (2014). BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Parts 1 and 2: Noise and Vibration

14.2. Construction Noise

Assessment of Sensitivity (Value)

14.2.1. The method for the construction phase assessment does not determine the value or sensitivity of the receptor but is instead based on the identification of representative receptors that are most likely to be affected by the construction works and that would be sensitive to noise impacts, for example residential properties.

14.2.2. An assessment of potential noise and vibration impacts from construction activities will be undertaken in accordance with guidance in BS 5228.

14.2.3. An outline assessment of construction noise and vibration impacts on the existing and proposed (where construction phasing information is available) noise and vibration sensitive receptors will be undertaken in accordance with the ABC method outlined in BS 5228.

14.2.4. Construction noise Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL) values are to be generated using the baseline noise levels, characterised for daytime, evening, and night-time periods. The noise significance criteria for residential receptors used to appraise construction noise are summarised in Table 14-1. The construction noise thresholds and baseline noise data are free-field noise levels.

Table 14-1 Construction noise LOAEL and SOAEL criteria for residential buildings

Assessment type	Time period	LOAEL	SOAEL
Construction noise	Day 07:00-19:00 Weekday and 07:00-13:00 Saturdays	Baseline noise levels $L_{Aeq,T}$	Threshold level determined as per BS 5228-1 Section E3.2 and Table E.1 BS 5228-1 (reproduced in Table 14-2)
	Night 23:00-07:00	Baseline noise levels $L_{Aeq,T}$	Threshold level determined as per BS 5228-1 Section E3.2 and Table E.1 BS 5228-1 (reproduced in Table 14-2)
	Evening and weekends (time periods not covered above)	Baseline noise levels $L_{Aeq,T}$	Threshold level determined as per BS 5228-1 Section E3.2 and Table E.1 BS 5228-1 (reproduced in Table 14-2)

Table 14-2 The ABC method BS 5228-1

Assessment Category and threshold value period	Threshold value, in decibels (dB) ($L_{Aeq,T}$)		
	Category A	Category B	Category C
Night-time (23:00-07:00)	45	50	55
Evening and weekends	55	60	65
Daytime (07:00 – 19:00) and Saturdays (07:00-13:00)	65	70	75
Note 1 A potential significant effect is indicated if the $L_{Aeq,T}$ noise level arising from the site exceeds the threshold level for the Category appropriate to the ambient noise level. Note 2 If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total $L_{Aeq,T}$ noise level for the period increases by more than 3 dB due to site noise. Note 3 Applied to residential receptors only.			
A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values. B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as Category A values. C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than Category A values. D) 1900-2300 weekdays, 1300-2300 Saturdays and 0700-2300 Sundays. Source: Table E.1, BS 5228-1			

Magnitude of Impact

14.2.5. Once LOAEL and SOAEL values have been identified, the magnitude of potential noise impact is then assessed. To assess the magnitude of impact for construction noise at a given receptor the criteria in Table 14-3 is proposed. ‘Minor’ magnitudes of impact are considered to represent the threshold of perceptibility.

14.2.6. Construction traffic Basic Noise Level (BNL) changes shall be calculated for roads within the construction traffic study area using the methodology found in the ‘Calculation of Road Traffic Noise’, 1988 (CRTN). The proposed criteria to identify the magnitude of impact on receptors from construction traffic is also in Table 14-3.

Table 14-3 Magnitude of impact and construction noise descriptions

Magnitude of impact	Construction noise level ($L_{Aeq,T}$)	Change in construction traffic noise level ($L_{A10,18h}$)
Major	Greater than or equal to the SOAEL +5 dB	Greater than or equal to 5 dB
Moderate	Greater than or equal to the SOAEL and below the SOAEL +5 dB	Greater than or equal to 3 dB and less than 5 dB
Minor	Greater than or equal to the LOAEL and below the SOAEL dB	Greater than or equal to 1 dB and less than 3 dB
Negligible	Below the LOAEL	Less than 1 dB

Significance of Effect

14.2.7. A potential significant effect will be deemed to occur where a major or moderate magnitude of impact will occur for a period of 10 or more days of working in any 15 consecutive days or for a total number of days exceeding 40 in any six consecutive months. Best Practicable Means will be recommended in order to minimise the impact of construction noise and vibration as far as reasonably practicable.

Cumulative Construction Noise

14.2.8. Cumulative effects from construction noise from other schemes will be assessed on a qualitative basis. Reasonably Foreseeable Future Projects (RFFPs) within 300m of the Scheme are to be identified and assessed for interproject cumulative effects.

14.3. Construction Vibration

Assessment of Sensitivity (Value)

14.3.1. Construction vibration calculations will be undertaken in accordance with guidance in BS 5228 ‘Code of practice for noise and vibration control on construction and open sites, Part 2: Vibration'. Construction vibration impacts will be assessed with reference to the DMRB LA 111, which provides specific guidance on the appraisal of construction phase impacts from road schemes. Based on the DMRB LA 111, the significance of potential impacts is proposed to consider the magnitude of the vibration and whether threshold levels for the LOAEL or SOAEL are exceeded.

Table 14-4 Construction vibration LOAELs and SOAELs for all receptors

Threshold level	Vibration level (PPV)	Effect
LOAEL	0.3 mm/s	Vibration might be just perceptible in residential environments
SOAEL	1.0 mm/s	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated

Magnitude of Impact

14.3.2. To assess the magnitude of impact of construction vibration reference will be made to DMRB LA 111, Table 3.33**.** This is reproduced below. 'Moderate' and Major' magnitudes of impact are considered to represent an exceedance of the threshold for a SOAEL. 'Minor' magnitudes of impact are considered to represent the threshold of a LOAEL, however construction vibration may still be perceptible when predicted to be below the LOAEL.

Table 14-5 Magnitude of impact of construction vibration levels

Magnitude of Impact	Vibration level
Major	Above or equal to 10 mm/s PPV
Moderate	Above or equal to SOAEL and below 10 mm/s PPV
Minor	Above or equal to LOAEL and below SOAEL
Negligible	Below LOAEL

Source: Table 3.33, DMRB LA 111

Significance of Effect

14.3.3. A significant effect attributed to construction vibration is likely where it is determined "where a major or moderate magnitude of impact will occur for a duration exceeding:

- either 10 or more days or nights in any 15 consecutive days or nights; or
- a total number of days exceeding 40 in any 6 consecutive months"
- Any major vibration levels are considered a significant effect irrespective of duration of activities and should be avoided.

14.4. Operational Noise

Assessment of Sensitivity (value)

14.4.1. For the operational phase assessment, receptors are assigned a value based on the criteria set out in Table 14-6.

Table 14-6 Criteria for determining the value or sensitivity of noise and vibration receptors

Receptor Sensitivity	Receptors Sensitive to Noise	Receptors Sensitive to Vibration
High	Residential buildings, educational buildings (schools, nurseries, universities etc..), hospitals and medical centres, care homes, places of worship, community centres and libraries. Designated nature conservation sites, containing noise sensitive species where noise has the potential to impact breeding habits or threaten species in any other way.	Listed buildings and non-earthwork Scheduled Monuments that may be in a structurally unsound condition. Academic, research or commercial buildings housing vibration sensitive equipment. Unreinforced or light framed structures.
Medium	Areas primarily used for leisure activities including Public Rights of Way, sports facilities, sites of historic or cultural importance, camp sites, hotels, gardens and parks. Scheduled Monuments depending on their usage.	Residential or light commercial buildings.
Low	Offices, cafes/bars with external areas. Scheduled Monuments depending on the usage.	Reinforced or framed structures. Industrial, heavy commercial buildings and earthworks (Scheduled Monuments).
Negligible	Industrial or retail premises.	Not applicable.

14.4.2. British Standard 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' (hereafter referred to as BS 4142) describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in the standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

14.4.3. The standard is used to determine the rating levels for sources of sound of an industrial and/or commercial nature and the ambient, background and residual sound levels at outdoor locations. These levels could be used for the purposes of investigating complaints; assessing sound from proposed new or modified sound sources; and assessing sound at proposed new dwellings or premises used for residential purposes. However, the determination of sound amounting to a nuisance is beyond the scope of the standard.

14.4.4. The procedure contained in BS 4142 provides a framework for assessing the significance of sound. The initial significance depends upon the margin by which the rating level ($L_{Ar,T}$) of the sound sources exceeds the background sound level ($L_{A90,T}$) and the context in which the sound occurs.

14.4.5. The reference time interval for the specific sound source 'Tr' is 60 minutes during the daytime and 15 minutes during the night. The reduced reference time at night reflects the increased sensitivity to sound during this period. The relevant time periods for daytime and night-time are as follows:

- Daytime – 07:00 to 23:00 hours; and
- Night-time – 23:00 to 07:00 hours.

14.4.6. An initial estimate of the impact of the sound source is obtained by subtracting the measured background sound level from the rating level and considering the following:

- Typically, the greater this difference, the greater the magnitude of the impact.
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

14.4.7. The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

14.4.8. Certain acoustic features can increase the magnitude of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where such features are present at the assessment location and have the potential to increase disturbances, the standard adds acoustic penalties to the specific sound level to obtain the rating level. Character corrections can be included for tonality, impulsivity, other sound characteristics that make it “readily distinctive”, and intermittency.

14.4.9. Background noise levels representative of the nearest sensitive receptors to the compressor station will be determined based on baseline noise survey data complemented with Strategic noise mapping (from DEFRA) where appropriate.

14.4.10. Where the background noise levels are low BS 4142 states that absolute noise level criteria to protect the ambient acoustic environment (i.e. outdoor living areas and internal sleep disturbance in bedrooms) is also relevant to the assessment.

14.4.11. The threshold values for the LOAEL and the SOAEL for operational noise in Table 14-7 are based on the guidance in BS4142.

Table 14-7 Operational noise LOAEL and the SOAEL values

Assessment type	Time period	Rating Level (dB LAr,T)	
		LOAEL	SOAEL
Operational noise	Day 0700-2300	The higher of: Background sound levels (L_{A90}) and 50 dB $L_{Aeq,T}$	The higher of: 10dB above Background sound levels (L_{A90}) and 60 dB $L_{Aeq,T}$
	Night 2300-0700	The higher of: Baseline noise levels $L_{Aeq,T}$ and 40 dB L_{night}	10dB above baseline noise levels $L_{Aeq,T}$ and 50 dB L_{night}

Magnitude of Impact

14.4.12. To assess the magnitude of impact of operational noise from mechanical plant such as the compressor station the criteria in Table 14-8 is proposed.

Table 14-8 Operational noise magnitude of impact

Magnitude of Impact	Noise level
Major	Above SOAEL
Moderate	Above LOAEL and below or equal to SOAEL
Minor	Below or equal to LOAEL
Negligible	More than 10dB below LOAEL

Significance of Effect

14.4.13. Taking the context of the Proposed Development and study area into account, for a receptor that is classified as highly sensitive, a major or moderate impact from operational noise is considered to result in a likely significant effect.

15. Air Quality

15.1. Assessment Methodology and Study Area

15.1.1. The following guidance documents have been used to inform the air quality scoping assessment and proposed methodology for further assessment:

- Defra's Local Air Quality Management (LAQM) Technical Guidance (TG.22)[46];
- Institute of Air Quality Management (IAQM) Construction Dust Guidance[47];
- Environmental Protection UK (EPUK)/IAQM Planning Guidance[48];
- Environment Agency Guidance on air emissions risk assessment for environmental permit[49];
- Environment Agency Guidance on emerging techniques for hydrogen production by electrolysis of water[50];
- Natural England's air pollution and development: advice for local authorities[51];
- IAQM 'A guide to the assessment of air quality impacts on designated nature conservation sites 2020.' (IAQM Designated Site Guidance.)[52];
- IAQM 'Guidance on the assessment of odour for planning'[53]

15.1.2. The air quality study area for the potential effects of construction dust is defined as the area within 250 m of the Site and within 50 m of the route(s) used by construction vehicles on the public highway up to 250 m from the Site entrance, in accordance with the IAQM Construction Dust Guidance.

15.1.3. For the potential impacts of construction and operation on air quality, the study area will be defined as the area within 200 m of the roads affected by changes in traffic exceeding the screening criteria in accordance with EPUK/IAQM Planning Guidance.

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[46] Department for Environment Food & Rural Affairs, Local Air Quality Management, Technical Guidance (TG22), May 2025. Available online at: https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/

[47] Institute of Air Quality Management (IAQM) (2024). Guidance on the assessment of dust from demolition and construction. Available online at: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf

[48] Institute of Air Quality Management (2017) Land-Use Planning and Development Control: Planning for Air Quality. Available online at: http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

[49] Environment Agency - Guidance on air emissions risk assessment for environmental permit (January 2016 (updated July 2025). Available online at: https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit

[50] Environment Agency Guidance – Hydrogen production by electrolysis of water: emerging techniques (March 2024). Available online at: https://www.gov.uk/guidance/hydrogen-production-by-electrolysis-of-water-emerging-techniques

[51]Natural England - Air pollution and development: advice for local authorities (October 2025). Available online at: https://www.gov.uk/guidance/air-pollution-and-development-advice-for-local-authorities

[52] IAQM - A Guide to the assessment of air quality impacts on designated nature conservation sites' v1.1. (2020). Available online at: https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2020.pdf

[53] IAQM, 'Guidance on the assessment of odour for planning', Version 1.1 (2018). Available online at https://iaqm.co.uk/text/guidance/odour-guidance-2014.pdf

15.1.4. Operational stack emissions will be assessed qualitatively considering sensitive receptors within 2 km of the Site.

15.2. Construction dust risk assessment

15.2.1. The Institute of Air Quality Management (IAQM) Construction Dust Guidance[47] provides a framework for a risk-based approach to the assessment of dust and particulate emissions from demolition and construction and proposes good practice control measures that are "highly recommended" or "desirable" for dust control for the various dust risk categories.

15.2.2. The assessment is considered in the context of the overall scale and nature of the development under consideration and the potential sensitivity of neighbouring land uses. The quantity and distribution of dust emissions vary according to type, duration and location of activity, weather conditions and the effectiveness of suppression (mitigation) measures. The criteria and definitions that will be applied are provided in Table 15-1 to Table 15-2.

Assessment of Sensitivity (Value)

15.2.3. The IAQM Construction Dust Guidance requires the classification of the sensitivity of receptors to dust impacts, based on the type of receptors (see Table 15-1). The classification of the sensitivity of receptors and sensitivity of the surrounding area to dust impacts is determined based on the number and distance of the receptors from the sources of dust emissions in terms of soiling, human health and ecological effects.

Table 15-1 Examples of receptor sensitivity categories to effects during construction

Sensitivity	Dust Soiling Effects	Health Effects of PM_{10}	Ecological Effects
High	Dwellings, Museums, Medium and long-term car parks, Car showrooms	Residential properties, Hospitals, Schools, Residential care homes	International or national designated site where the designated features may be affected by dust soiling.
Medium	Parks, Places of work.	Offices and Shops.	National designated site where the designated features may be affected by dust soiling.
Low	Playing fields, Farmland, Footpaths, Short term car parks, Roads.	Public Footpaths, Playing fields, Parks, Shopping Streets	Locally designated site where the designated features may be affected by dust soiling.

Magnitude of Impact

15.2.4. Impact magnitude is determined using professional judgement and the criteria for the assessment (see Table 15-2).

Table 15-2 Examples of dust emission magnitude definitions

Magnitude	Demolition	Earthworks	Construction	Trackout
Large	Total building volume >75,000m^3	Total site area >110,000m^2	Total building volume >75,000m^3	>50 HDV outward movements per day
Medium	Total building volume between 12,000m^3 and 75,000m^3	Total site area between 18,000m^2 and 110,000m^2	Total building volume between 12,000m^3 and 75,000m^3	20 – 50 HDV outward movements per day
Small	Total building volume <12,000m^3	Total site area <18,000m^2	Total building volume <12,000m^3	<20 HDV outward movements per day

Significance of Effect

15.2.5. The assessment provides the likely risk of effects judged based on the magnitude of impact to the assessed sensitivity of the receptor (see Tables 15-3 and Table 15-4) to recommend appropriate mitigation. Assessment of the significance of the residual dust risk is then undertaken, after the application of the site-specific mitigation.

Table 15-3 Risk of dust impacts – demolition

Sensitivity of Area	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 15-4 Risk of dust impacts – earthworks, construction and trackout

Sensitivity of Area	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

15.3. Construction vehicle emissions

15.3.1. The potential impact of construction vehicle emissions on local air quality will be evaluated using criteria given in the Environmental Protection UK (EPUK)/IAQM Planning Guidance[48], which advises that an air quality assessment is required when the following traffic change criteria is exceeded:

- A change of Light Duty Vehicle (LDV) flows of more than 500 annual average traffic (AADT); or
- A change of heavy-duty vehicles (HDV) flows of more than 100 AADT.

15.3.2. Details of the numbers of construction vehicles are not available at the time of writing. Further screening and, if required, an assessment will be undertaken at the ES stage. The assessment will be appropriate to the location and scale of the Proposed Development, so may be qualitative, or comprise screening calculations or detailed dispersion modelling. The assessment will consider any potential overlap between the construction and the operational traffic, as the prolonged construction phase associated with ongoing cavern development, successive infrastructure packages, and staged commissioning across the Site is likely to extend beyond the first operational year of the Proposed Development. Where further quantitative consideration is required for construction vehicle emissions, an assessment of the magnitude of change in local air pollutant concentrations, relative to the air quality objectives, will be undertaken (see Table 15-5) with the significance interpreted with reference to the EPUK/IAQM Planning Guidance.

Table 15-5 Air Quality impact descriptions for individual human health receptors

Long term average concentration at receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76 - 94% of AQAL	Negligible	Slight	Moderate	Moderate
95 - 102% of AQAL	Slight	Moderate	Moderate	Substantial
103 - 109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

15.4. Operational stack emissions

15.4.1. A qualitative assessment of the stack emissions from the flare, SDG and firewater pumps will be undertaken as part of the EIA. Further assessment will be conducted for the permit application, if necessary, when details on the plant design are available.

15.5. Cumulative effects

15.5.1. Consideration of cumulative effects will be undertaken with reference to existing background concentrations used which include local industrial emissions. Other proposed and committed developments will be considered through the interpretation of published air dispersion modelling studies and/or transport assessments where these are available. If suitable studies are not available, a qualitative evaluation will be provided.

16. Waste and Materials

16.1. Assessment Methodology and Study Area

16.1.1. An environmental assessment will be carried out to assess the impacts of materials and waste from the Proposed Development during its construction phase only, as operational impacts are recommended to be scoped out. This is due to likely negligible quantities of materials being used and waste being generated, compared to the baseline.

16.1.2. The assessment will comprise of the following tasks:

- Review of relevant legislation, national, regional and local planning policies and guidance to identify material and waste objectives and targets;
- Establish the baseline for materials and waste;
- Summarise estimated quantities and types of materials needed for construction and wastes to be generated during construction, demolition and excavation (CD&E);
- Identify mitigation measures to prevent, reduce, reuse, recycle and / or recover material assets and wastes from the Proposed Development; and
- Identify and assess the impacts of the Proposed Development by comparing the information in the summary stages against the baseline data.

16.1.3. An assessment of the significance of environmental effects from the use of materials and generation of waste will be made using the criteria in tables below (Table 16-1 and Table 16-2) which are set out in the IEMA Guidance.

16.1.4. The study areas that are applicable to the Proposed Development (as defined in the Institute of Environmental Management and Assessment (IEMA) Guidance)[54] are:

- The development study area – this comprises the Proposed Development footprint and any areas required for temporary access, site compounds, working platforms and other enabling activities; and
- The expansive study area – this extends to the availability of construction materials and remaining landfill void.

16.1.5. Based on professional judgement and the availability of data, the expansive study area has been chosen as:

- The North West England region and, where necessary or especially where regional data are unavailable, the UK for materials;
- The North West England region for hazardous waste; and,
- The Cheshire East for inert and non-hazardous waste.

[54] Institute of Environmental Management and Assessment guide to Materials and Waste in Environmental Impact Assessment (2020). Available online at: iema-materials-and-waste-in-eia-march-2020.pdf

16.1.6. Receptors, with regards to materials and waste, are defined as:

- The regional (north west) and national materials market;
- Local and regional landfill void capacity; and
- Local Mineral Safeguarded Areas (MSA) and peat resources.

16.2. Assessment of Sensitivity (Value)

Table 16-1 Criteria for sensitivity of the receptor

Sensitivity of receptor	Criteria (highest category applies where one or more criteria are met)
Very High	Materials Materials are known to be insufficient in terms of production, supply and/or stock; and/or comprise no sustainable features and benefits compared to industry-standard materials. Waste Inert and non-hazardous waste baseline landfill void capacity is expected to reduce very considerably (by >10%); end during construction or operation; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet forecast demand. Hazardous waste baseline landfill void capacity is expected to reduce very considerably (by >1%); end during construction or operation; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet forecast demand.
High	Materials Materials are forecast (through trend analysis and other information) to suffer from known issues regarding supply and stock; and/or comprise little or no sustainable features and benefits compared to industry-standard materials. Waste Inert and non-hazardous waste baseline landfill void capacity is expected to reduce considerably by 6-10% as a result of wastes forecast. Hazardous waste baseline landfill void capacity is expected to reduce considerably by 0.5-1% as a result of wastes forecast.
Medium	Materials Materials are forecast (through trend analysis and other information) to suffer from some potential issues regarding supply and stock; and/or are available comprising some sustainable features and benefits compared to industry-standard materials. Waste Inert and non-hazardous waste baseline landfill void capacity is expected to reduce by 1-5% as a result of wastes forecast. Hazardous waste baseline landfill void capacity is expected to reduce by 0.1-0.5% as a result of wastes forecast.
Low	Materials Materials are forecast (through trend analysis and other information) to be generally free from known issues regarding supply and stock; and/or are

Sensitivity of receptor	Criteria (highest category applies where one or more criteria are met)
	available comprising a high proportion of sustainable features and benefits compared to industry-standard materials. Waste Inert and non-hazardous waste baseline landfill void capacity is expected to reduce by <1% as a result of wastes forecast. Hazardous waste baseline landfill void capacity is expected to reduce by <0.1% as a result of wastes forecast.
Negligible	Materials Materials are forecast (through trend analysis and other information) to be free from known issues regarding supply and stock; and/or are available comprising a very high proportion of sustainable features and benefits compared to industry-standard materials*. Waste Inert and non-hazardous waste baseline landfill void capacity is expected to remain unchanged or is expected to increase through a committed change in capacity. Hazardous waste baseline landfill void capacity is expected to remain unchanged or is expected to increase through a committed change in capacity.

* Subject to supporting evidence, sustainable features and benefits could include, for example, materials or products that: comprise reused, secondary or recycled content (including excavated and other arisings); support the drive to a circular economy; or in some other way reduce lifetime environmental impacts

16.3. Magnitude of Impact

Table 16-2 Criteria of magnitude of the impact

Impact Magnitude	Criteria (highest category applies where one or more criteria are met)
Major	Materials The consumption of one or more materials is >10% by volume of the regional baseline availability; and/or more than one allocated mineral site is substantially sterilised by the development rendering it inaccessible for future use. Waste Inert and non-hazardous waste generated by the development will reduce regional landfill void capacity baseline by >10%. Hazardous waste generated by the development will reduce national landfill void capacity baseline by >1%.
Moderate	Materials The consumption of one or more materials is between 6-10% by volume of the regional baseline availability; and/or one allocated mineral site is substantially sterilised by the development rendering it inaccessible for future use. Waste

Impact Magnitude	Criteria (highest category applies where one or more criteria are met)
	Inert and non-hazardous waste generated by the development will reduce regional landfill void capacity baseline by 6-10%. Hazardous waste generated by the development will reduce national landfill void capacity baseline by <0.5-1%.
Minor	Materials The consumption of one or more materials is between 1-5% by volume of the regional baseline availability; and/or the development has the potential to adversely and substantially impact access to one or more allocated mineral site (in their entirety), placing their future use at risk. Waste Inert and non-hazardous waste generated by the development will reduce regional landfill void capacity baseline by 1-5%. Hazardous waste generated by the development will reduce national landfill void capacity baseline by <0.1-0.5%.
Negligible	Materials The consumption of no individual material type is equal to or greater than 1% by volume of the regional baseline availability. Waste Inert and non-hazardous waste generated by the development will reduce regional landfill void capacity baseline by <1%. Hazardous waste generated by the development will reduce national landfill void capacity baseline by <0.1%
No change	Materials The consumption of no materials is required. Waste Inert and non-hazardous zero waste generation and disposal from the development. Hazardous zero waste generation and disposal from development.

16.4. Significance of Effect

16.4.1. Table 16-3 provides definitions of effect thresholds which are set out in the IEMA Guidance

Table 16-3 Significance matrix

		Magnitude of Impact				
		Major	**Moderate**	**Minor**	**Negligible**	**No Change**
Sensitivity (or Value) of Receptor	**Very High**	Very Large	Very Large or Large	Large or Moderate	Slight	Neutral
	High	Very Large or Large	Large or Moderate	Moderate or Slight	Slight or Neutral	Neutral
	Medium	Large or Moderate	Moderate	Slight	Slight or Neutral	Neutral
	Low	Moderate or Slight	Slight	Slight or Neutral	Slight or Neutral	Neutral
	Negligible	Slight	Slight or Neutral	Slight or Neutral	Neutral	Neutral

16.4.2. Environmental effects for both materials and waste are combined to determine the significance level, as shown in Table 16-4. The effects of the Proposed Development can then be defined as significant or not significant.

Table 16-4 Significance level

Effect	Waste	Materials
Neutral	Not significant	Not significant
Slight		
Moderate	Significant	Significant
Large		
Very large		

17. Climate Vulnerability

17.1.1. As this topic is proposed to be scoped out, no EIA methodology has been presented.

18. Effects on Climate

18.1. Study Area

18.1.1. The study area will include all Greenhouse Gas (GHG) emitting activities within the Site, as well as relevant GHG-emitting activities beyond the Site boundary that contribute to the total GHG emissions of the Proposed Development. The study area will not be limited to the geographic extent of the Proposed Development itself, as many emissions are expected to result from upstream and off-site activities such as raw material extraction and processing.

18.2. Assessment Methodology

18.2.1. The assessment of the effects of the Proposed Development on climate will include the quantification of GHG emissions from the construction and operational phases of the Proposed Development. These emissions will be considered in the context of local and national policy and the UK Government Carbon Budgets.

18.2.2. The life cycle stages and GHG sources presented in Table 18-1 have been included within the assessment.

Table 18-1 Proposed scope of assessment

Lifecycle stage	Potential sources of GHG emissions	Scoped in / out?
Construction		
A1-3 Product stage	Emissions from production, manufacture and intra-manufacturing transport of materials required to construct the Proposed Development.	Scoped in
A4 Transportation	Emissions associated with the transportation of materials and equipment to the Site.	Scoped in
A5 Construction processes	Emissions associated with the construction of the Proposed Development from the use of plant and machinery.	Scoped in
Land use and forestry	Emissions from the loss of stored carbon within habitats that are degraded or lost during construction.	Scoped in
Operation		
B1 Use	Emissions from the use of the Site, including staff travel, waste generation and land-use change.	Scoped in
B2 – 5 Maintenance, repair, replacement and refurbishment	Emissions from the replacement of worn and damaged materials	Scoped in
B6 Operational energy use	Emissions from energy required to operate the Site	Scoped in
B7 Operational water use	Emissions from the consumption of water across the Site	Scoped in
B8 User's utilisation	Operational transport of users and goods to the building during operation	Scoped out – there are minimal anticipated emissions arising from this lifecycle stage
Decommissioning		
C1-4 Decommissioning activities	The end of the life and decommissioning plan is not available at the moment; however, decommissioning is to be scoped concurrently with the construction phase as impacts are anticipated to be similar.	Scoped in.

18.2.3. The GHG emissions from the Proposed Development will be calculated using data from the emerging design and relevant carbon emissions factors. The quantification methodology

will, where applicable, follow the Royal Institute of Chartered Surveyors Whole life carbon assessment for the built environment guidance[55].

18.2.4. The quantification of GHG emissions will be calculated using an appropriate carbon tool, most likely the Atkins Carbon Knowledgebase tool. This tool contains a detailed library of calculation formulae and over 1,000 emissions factors from authoritative sources, such as the Inventory of Carbon and Energy (ICE, versions 1.6(a), 2.0 and 3.0), and the Defra Greenhouse Gas Reporting Conversion Factors.

18.2.5. Operational emissions will be calculated for the entire operational lifespan of the Proposed Development and will be compared against the baseline emissions.

18.3. Assessment of Sensitivity (Value)

18.3.1. The atmosphere will be treated as the single largest receptor of GHG emissions. While the atmosphere is sensitive to GHG emissions, its value does not vary depending on the source. Therefore, the assessment will focus on the magnitude of GHG emissions in the context of the baseline and national and local efforts to reduce emissions.

18.4. Magnitude of Impact

18.4.1. The assessment approach will align with the guidance set out in the IEMA Guide: Assessing Greenhouse Gas Emissions and Evaluating their Significance.

18.4.2. The effects of the Proposed Development on climate will be assessed by quantifying the magnitude of emissions during the construction and operational phase. Different GHGs will be reported as their carbon dioxide equivalent (CO_2e) to account for varying global warming potentials.

18.5. Significance of Effect

18.5.1. The emissions calculated for the Proposed Development will be compared against the baseline for the relevant assessment years. The difference between these emissions will be considered the impact of the Proposed Development.

18.5.2. The significance of the effect will be determined in accordance with IEMA's 2022 guidance[56], which states that significance is not based solely on the presence or magnitude of emissions, but on whether the project contributes to reducing GHG emissions relative to a baseline consistent with a trajectory toward net zero by 2050. It is important to state that there is no legal limit for GHG emissions for any one development.

18.5.3. Where project emissions are not aligned with the science-based 1.5°C trajectory, effects will be judged as moderate adverse or major adverse, and thus considered significant. Projects aligned with the trajectory may be considered to have minor adverse or negligible

[55] Royal Institute of Chartered Surveyors Whole life carbon assessment for the built environment (2024). Available online at: Whole life carbon assessment (WLCA) for the built environment

[56] Institute of Environmental Management & Assessment (IEMA) Guide: Assessing Greenhouse Gas Emissions and Evaluating their Significance (February 2022 (second edition)). Available online at: 2022_iema_greenhouse_gas_guidance_eia.pdf

effects, which are not significant. Projects that result in GHG emissions being avoided or removed from the atmosphere may be considered to have a significant beneficial effect.

18.5.4. The UK's 2050 net zero target and interim carbon budgets, as defined in the Climate Change Act 2008 (amended 2019), will be used as reference points, in line with the UK Climate Change Committee's guidance.

19. Socioeconomics

19.1. Assessment Methodology and Study Area

19.1.1. The assessment of socio-economic impacts will include:

- A review of the strategic policy context to provide an outline of the relevant national and subnational / local social and economic objectives of the area;
- Identification of the impact area, in relation to each potential socio-economic impact, for the assessment of the Proposed Development;
- A desktop review of all publicly available information on current socio-economic and labour market conditions in the study area to establish the baseline using accepted Government sources, such as the Census and Office for National Statistics (ONS) data, including the baseline indicator groups and assembled data outlined above;
- Assessment of likely significant socio-economic effects of the Proposed Development during the construction and operational phases based on sensitivity value of receptor and magnitude of effect;
- A review of possible social value interventions, during both the construction and operational phase, which will consider strategic priorities and socio-economic context for the study area. This is likely to include local labour agreements, utilising the local supply chain and supporting local communities with employment and skills opportunities;
- Recommendation of mitigation measures where necessary;
- Assessment of significance of residual effects assuming that the mitigation measures are implemented;
- Identification of likely significant additive / cumulative effects regarding other consented schemes in the local area; and
- Consideration of synergistic effects including the intra-project interaction of socio-economic effects with other ES topic areas.

19.1.2. Socio-economic impacts can be assessed with reference to a spectrum of spatial scales, ranging from the immediate local catchment through to the wider, sub-regional scale. The study area is also influenced by the availability of baseline data which may not always be available down to a local catchment area level.

19.1.3. In the case of the Proposed Development, we propose to take the approach of two overlapping geographies whereby the primary study area would be Cheshire East as this is the local authority in which the Proposed Development is located. Given the nature of the Proposed Development being a Hydrogen Storage Facility, specialised skills such as chemical engineers, process operators and safety specialists will be required which may not be available locally. As such Travel to Work areas (TTWA) will be included in the study area as this reflects commuting patterns making them the most accurate representation of the labour market that will supply workers to the facility. For this we will use the Crewe TTWA.

19.2. Impact Assessment

19.2.1. Qualitative and quantitative assessments will be undertaken in line with assessment methodologies from published guidance, including:

- Homes and Communities Agency's (HCA's) Additionality Guide and Employment Densities Guide[57];
- HCA's Calculating Cost Per Job Best Practice Note[58];
- Ministry of Housing, Community and Local Government (MHCLG) Appraisal Guide 3rd Edition[59];
- Department for Business and Trade and Department for Department for Science, Innovation and Technology; and
- Professional judgement when required for assumptions used in approach.

19.2.2. The key to determining the socio-economic effects of the Proposed Development will be establishing its net additional impact or 'additionality' compared to a Reference Case (defined below). This is the extent to which activity takes place at all, on a larger scale, earlier or within a specific designated area or target group as a result of the intervention.

19.2.3. The key concepts included are:

- Gross direct employment effects – these will be estimated based on the cost of the Proposed Development (for construction-phase employment) and commercial floorspace delivered (for operation-phase employment);
- Leakage – the proportion of outputs that benefit those outside of the area of impact;

19.2.4. Displacement – the proportion of outputs accounted for by reduced outputs elsewhere in the area of impact.

19.2.5. The socio-economic assessment will also explore the scope for mitigation and enhancement measures which could add value to the local economy and community, these may include training and employment support measures e.g., ensuring local people are aware in advance of job opportunities through targeted advertisement at education institutions.

[57] Homes and Communities Agency Additionality Guide (2014 (fourth edition)). Available online at: HCA Policy Covers
[58] Homes and Communities Agency Calculating Cost Per Job – Best Practice Note (2015 (third edition)). Available online at: Microsoft Word - CPJ BPN 2015 3rd Edition - Final
[59] Ministry of Housing, Community and Local Government – The MHCLG Appraisal Guide (March 2025 (third edition)). Available online at: MHCLG: The Appraisal Guide

20. Human Health

20.1. Guidance

20.1.1. This section provides the proposed scope and methodology to assess the impact of the Proposed Development on Human Health.

20.1.2. The Human Health assessment will be driven by the IEMA (now ISEP) guidance.

20.1.3. The scoping stage has been informed by 'Effective Scoping of Human Health in Environmental Impact Assessment[60], supplemented by elements of the DMRB LA112 standard in relation to the definition of the study area and relevant baseline[61].

20.1.4. The human health assessment will be undertaken in accordance with ISEP guidance 'Determining Significance for Human Health Assessment in Environmental Impact Assessment'[62].

20.2. Assessment Methodology and Study Area

20.2.1. From a public health perspective, likely changes in, for example, air quality or noise levels are changes in determinants of health, which can in turn lead to effects on human health. Therefore, the consideration of potential impacts or effects on human health first requires a separate consideration of the way in which any change identified to the baseline conditions, including that identified in the other technical chapters of the EIA Scoping Report, can be expected to manifest itself in health and well-being outcomes. For example, a change in air quality can cause a change in respiratory health; and noise or vibration can cause a change in social or mental wellbeing, and this can have impacts for the people who are more vulnerable or susceptible in the study area. The assessment therefore considers the issue of attribution i.e. how the health outcomes in the current and future population could be affected (positively or negatively) as a result of impacts on determinants of human health caused by the Proposed Development.

20.2.2. Impacts on human heath can be influenced (both negatively and positively) individually or cumulatively by a range of wider health determinants and are further modified by local community circumstance such as living conditions and existing health profiles. Therefore, the human health assessment will consider the distribution of any potential impacts of the Proposed Development within the affected population, including potential impacts on the more vulnerable, sensitive, or disadvantaged population groups or individuals. The location and presence of these vulnerable groups within the study area and their profiles are outlined

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[60] Pyper, R., Waples, H., Beard, C., Barratt, T., Hardy, K., Turton, P., Netherton, A., McDonald, J., Buroni, A., Bhatt, A., Phelan, E., Scott, I., Fisher, T., Christian, G., Ekermawi, R., Devine, K., McClenaghan, R., Fenech, B., Dunne, A., Hodgson, G., Purdy, J., Cave, B. (2022) IEMA Guide: Effective Scoping of Human Health in Environmental Impact Assessment.

[61] DMRB LA 112 Population and human health. 2020. Available at: https://www.standardsforhighways.co.uk/search/1e13d6ac-755e-4d60-9735-f976bf64580a

[62] Pyper, R., Waples, H., Beard, C., Barratt, T., Hardy, K., Turton, P., Netherton, A., McDonald, J., Buroni, A., Bhatt, A., Phelan, E., Scott, I., Fisher, T., Christian, G., Ekermawi, R., Devine, K., McClenaghan, R., Fenech, B., Dunne, A., Hodgson, G., Purdy, J., Cave, B. (2022) IEMA Guide: Determining Significance for Human Health in Environmental Impact Assessment.

in the Chapter 5 of the Scoping Report (section 5.13) and will be developed further at the next stage of the EIA process.

20.2.3. The method of assessment for Human Health will use the following sequential steps:

- Study area – the study area relevant to human health is identified and summarised;
- Sensitive receptors – the receptors that have the potential to be affected by the Proposed Development (both positively or negatively) are identified. This comprises the wider population of the relevant study area, supplemented by the identification of sensitive/vulnerable groups that could be more susceptible to effects arising from impacts of the Proposed Development;
- Wider determinants of health – the wider determinants of health (i.e. a diverse range of social, economic and environmental factors that influence people's mental and physical health) considered relevant to the Proposed Development are identified and described;
- Sensitivity of receptors – the sensitivity of the receptors to changes to the wider health determinants are described, based on the criteria set out in the latest ISEP guidance; and
- Assessment criteria – the criteria for assessing the magnitude of impact and significance of effects (both positive and negative) of changes to the wider health determinants on the wider population and relevant sub-populations within this, as a result of the Proposed Development, are described.

Study Area

20.2.4. The Human Health assessment is concerned with the way in which people experience the environment, use community facilities and assets and move between important destinations. Consequently, it is based on community connections and function and extends over a broader geographic area, rather than being strictly related to a buffer distance from the temporary and permanent land take for the Proposed Development.

20.2.5. The Site boundary for the Proposed Development reflects the temporary and permanent land take. It has been used as the basis for identifying additional buffer distances to be applied and the maximum extent of potential direct impacts from the Proposed Development in terms of land use changes and is therefore used to inform the definition of the study areas.

20.2.6. For Human Health, IEMA (now ISEP) guidance on scoping human health assessment presents a range of different approaches to defining geographic scope. It includes recognition that it may be necessary to consider wider geographical areas for some impacts on health determinants and to offer flexibility, but that local area effects may differ, and it would be reasonable and proportionate to consider impacts at two or more geographic scales to focus on areas where a proposed development would exert most influence. The DMRB LA 112 standard advises setting a human health study area that encompass the communities and wards that are directly or indirectly affected by the Proposed Development. The Study Area for the Proposed Development comprises the entirety of the Church Minshull, Kingsbourne and South Middle Layer Super Output Area (MSOA), as defined in the Census 2021.

20.2.7. Effects within the Human Health assessment are derived from changes in wider health determinants. The appreciation of where impacts on determinants of human health could occur is informed by the other relevant EIA aspect assessments. Consequently, the study areas defined in each contributing EIA aspect assessment also apply, allowing for

variations due to the absence of construction phase land take proposals at this Scoping Stage. For the next stage of the EIA, these Study Areas will include:

- Water Environment: for construction and operation, features of the water environment within 1 km of the refined red line boundary that will be established for the Proposed Development;
- Landscape and Visual Impact Assessment: for construction and operation, 1 km from the refined red line boundary that will be established for the Proposed Development;
- Geology and Soils: for construction and operation, for the assessment of agricultural land and agricultural holdings, for the entirety of the agricultural land that is crossed, as well as land that may be required for compounds and temporary land take during the construction phase;
- Materials and Waste: for construction and operation, the Proposed Development footprint including any temporary land take. The expansive study area extends to the availability of construction materials and remaining landfill;
- Traffic and Transport: for construction and operation, the Proposed Development footprint including any temporary land take, as well as the Affected Road Network (ARN);
- Air Quality: for construction, within 250 m of the construction site boundary and 50 m of the trackout routes to assess potential effects of construction dust; for construction and operation, human health receptors identified within 200 m of the ARN; and
- Noise and Vibration: for construction, within 300 m of any construction works for noise and 100 m for vibration.

20.3. Human Health Sub Topic Assessment Baseline Factors

20.3.1. The Human Health assessment will consider the impacts of the Proposed Development on determinants of human health and use this to evaluate the resultant effects of these impacts on human health receptors. Potential determinants of human health appear in the IEMA (now ISEP) guidance for scoping human health assessment, in the format reproduced in Table 20-1 below. The DMRB LA112 standard presents a list of matters to be considered in identifying baseline factors that could experience impacts from a proposed development, potentially leading to effects on human health receptors.

20.3.2. The impacts of the Proposed Development will be considered in terms of changes to the following determinants of health, which have been derived from amalgamating the ISEP guidance and DMRB standard:

- Access to community, recreational and educational facilities
- Access to green space and open space
- Access to healthcare facilities
- Characteristics of the transport network
- Air quality
- Noise pollution and vibration

- Pollution of soils and water
- Landscape amenity
- Transport user safety
- Employment and income

20.3.3. For the purposes of reporting, the assessment will consider the impacts of the Proposed Development on the relevant determinants of human health taking account of both the IEMA (ISEP) and DMRB description of baseline factors. It will then assess how the changes in determinants of human health may manifest in effects for specific human health receptors.

Table 20-1 Wider determinants of health listed IEMA guidance (Source Table 5.1, IEMA 2022)

Table 5.1: EIA wider determinants of health to scope (not exhaustive)

Categories	Wider determinants of health
Health related behaviours	physical activity
	risk taking behaviour
	diet and nutrition
Social environment	housing
	relocation
	open space, leisure and play
	transport modes, access and connections
	community safety
	community identity, culture, resilience and influence
	social participation, interaction and support
Economic environment	education and training
	employment and income
Bio-physical environment	climate change mitigation and adaptation
	air quality
	water quality or availability
	land quality
	noise and vibration
	radiation
Institutional and built environment	health and social care services
	built environment
	wider societal infrastructure and resources

20.4. Identifying Sensitive Receptors

20.4.1. The baseline data is used to identify specific groups, including the presence of vulnerable groups who are more susceptible to change, and their sensitivity to impacts predicted to arise from the Proposed Development. The sensitivity of an individual or population/ population sub-group varies depending on their ability to withstand exposures and the range of associated impacts or effects, and the physiological (e.g. co-morbidities or disabilities) and socio-economic factors that increase their susceptibility to the exposure.

20.4.2. In broad terms, the population located within or closest to the Proposed Development would be most vulnerable or susceptible to changes occurring as a result of the activities associated with the Proposed Development. Although some of this population may not be

'vulnerable' in human health, social or other terms, they are likely to be more sensitive to any changes resulting from the Proposed Development than the wider population as a whole.

20.4.3. The population sub-groups identified as being more vulnerable or susceptible to impacts arising from the Proposed Development depends on the characteristics of the local population and the nature and proximity of the local population to the works and activities associated with the Proposed Development. The baseline study has identified the following vulnerable or sensitive population sub-groups as being present within the study area. These vulnerable groups, along with the wider group, will form the receptors for assessment together with a small number of geographically distinct receptor groups that have been included on the basis of their proximity to the Proposed Development.

- The vulnerable groups listed below are not mutually exclusive e.g. an individual may fit into one or more of these vulnerable group categories:
- Age: Families with children and adolescents (e.g. pregnant women, babies, children, and adolescents); and elderly persons.
- People who are physically or mentally disadvantaged (e.g. elderly people, people with physical and/or disabilities, people with other health problems or impairments)
- People who are materially disadvantaged (e.g. people on low income, people without access to a car, unemployed people).

20.5. Assessment of Sensitivity (Value)

20.5.1. The potential impacts and effects (both positive and negative) of the Proposed Development on the physical and mental health, and social wellbeing of the local population depends on the sensitivity of receptors to changes to the wider health determinants brought about by the Proposed Development. The sensitivity of receptors depends on whether the receptor is likely to be directly or indirectly affected and whether the receptors are well placed or otherwise to deal with these changes. For example, whilst the local health circumstance across the Study Area may be generally good, there may be groups of individuals within that defined population who are particularly sensitive and could experience disproportionate or differential effects. Where inequalities between areas or populations are wide (or at risk of widening), this indicates greater sensitivity.

20.5.2. The IEMA (ISEP) guidance includes indicative criteria for assigning health sensitivity. These have been used to assign sensitivity to the receptors at this Scoping stage, to support the receipt of comments within the Scoping Opinion and guide a more proportionate identification of impacts to be scoped into assessment.

20.6. Magnitude of Impact

20.6.1. Identifying and assessing the magnitude of the potential impacts of the Proposed Development (both positive and negative) depends on the characteristics of the impact on the wider health determinants (for example, from changes to air quality).

20.6.2. Where appropriate, the assessment is informed by the findings from the other technical chapters of the EIA Scoping Report (e.g. Air quality, Noise and vibration, landscape and townscape) and qualitatively considers, using professional judgement, how these findings can be expected to result in changes to human health, including the distribution of effects within the affected population.

20.6.3. However, some of the wider health determinants chosen for assessment such as 'Access to community, recreational and educational facilities (also drawing on the relevant land use baseline), and 'Employment and Income', for example, are not covered by the other technical assessments. Therefore, professional judgement, industry best practice, and experience from the assessment of similar projects is used to assess the impacts leading to resultant effects arising from the Proposed Development.

20.6.4. Using the criteria outlined within the IEMA guidance, the magnitude of impact for any changes to the wider health determinants on sensitive receptors is assessed as Major / Moderate / Minor / Negligible / No Change.

20.6.5. For consistency, the criteria will match, as closely as possible, that used in the technical assessments of the other environmental topics assessed in this EIA Scoping Report – bearing in mind that some of those assessments will identify aspects such as changes in concentrations of pollutants, and some will be based on quantitative outputs. No health effects are directly reported in the other chapters, although reference may be made in relation to health-based standards (i.e. legislative requirements). Therefore, this Human Health chapter partly focuses on a qualitative assessment of the health consequences of the identified changes reported in each of the technical chapters.

20.7. Significance of Effect

20.7.1. The significance of effects is determined by combining the sensitivity of the receptors with the magnitude of impact. Within the assessment, the significance of effects will be measured according to the Significance of Effect Matrix that appears as Table 4.1 of the IEMA (ISEP) guidance, using professional judgement, best practice, and knowledge from the assessment of similar development types.

20.7.2. Where two potential values of significance of effect are identified within the significance of effect matrix, professional judgement is used to assign the significance, based on understanding of details of both the magnitude of impact and sensitivity of the receptor. For the purposes of this assessment, major and moderate human health effects are considered to be significant. Minor and negligible effects are considered to be not significant.

20.7.3. The IEMA (ISEP) guidance emphasises the importance of adopting a population health approach when determining significance (para. 1.9) and notes that the "assessment of EIA significance at the level of individuals is not proportionate (para. 5.2)". This means that "the role of determining EIA levels of effect on health (including identifying significant effects) is therefore not to set a threshold of 'no harm' from development, but to show where, at a population or sub-population level, the harm should weigh strongly in the balance alongside the development's benefits for health and other outcomes."

20.7.4. The IEMA (ISEP) guidance offers important criteria to support the application of a proportionate approach when assigning significance, utilising professional judgement, as described in Table 7.4 of the IEMA (ISEP) guidance.

20.7.5. The following considerations have influenced the assignment of significance, as advocated by the IEMA guidance:

- Whether there would be a high level of exposure or widespread impact.
- Whether the population exposed to an impact is particularly sensitive due to pre-existing vulnerabilities or inequalities.
- The duration of effects and whether they would be reversible.

- Whether the impact is likely to contribute to or affect the deliverability of health policies.
- Whether the impact is likely to achieve health priorities.
- The level of acceptability, including whether statutory thresholds for pollutants would be exceeded and/or whether the issue is a public health priority.
- The severity of the related health outcomes (i.e. whether it is related to a change in mortality or morbidity).
- The strength of evidence for an association between a change in a determinant and health outcomes.
- Whether a large proportion of the population would likely be affected.
- Whether the impact is likely to increase or tackle health inequalities at a population level.

20.7.6. For the purposes of the assessment, short-term effects are predicted to last up to two years, medium-term effects are predicted to last over two years up to ten years and long-term effects are predicted to last beyond this.

21. Major Accidents and Disasters

21.1. Assessment Methodology and Study Area

21.1.1. The Study Area is the area within which a major accident or disaster could realistically originate and impact the Proposed Development, or where the Proposed Development could contribute to an accident with significant consequences. The study areas that are described in the other environmental topic sections are deemed to be sufficient for use in the consideration of Major Accidents and Disasters.

21.1.2. As construction and other operational risks (excluding a large scale release of hydrogen gas) are proposed to be scoped out of this topic no EIA methodology has been provided for these aspects.

21.1.3. For a large scale release of hydrogen gas, the assessment of risks to the environment will be undertaken in accordance with the methodology provided in the Chemical and Downstream Oil Industries Forum (CDOIF) Guideline Environmental Risk Tolerability for COMAH Establishments[63]; which provides a common methodology for determining the tolerability of environmental risks for COMAH establishments.

21.1.4. The CDOIF guideline provides definitions to enable derivation of the level of severity/harm and the duration/recovery category for each type of environmental receptor. These are combined to determine the overall 'consequence level' of an event / accident scenario, which in turn is combined in a risk matrix with the likelihood of the event / scenario to determine the risk and the tolerability of that risk.

21.1.5. The approach for assessing the risk to human receptors is similar and will be undertaken based on standard HSE risk assessment guidance and in alignment with the associated COMAH risk assessment. This will involve assessing the severity and likelihood of an event / accident scenario and combining these in a risk matrix to determine the tolerability of the risk. The likelihood and severity definitions to be used will be consistent with the HSE general guidance and take account of the 'As Low as Reasonably Practicable' (ALARP) principle.

[63] Chemical and Downstream Oil Industries Forum (CDOIF) Guideline - Environmental Risk Tolerability for COMAH Establishments, revision 2.0 2016, available here: https://www.sepa.org.uk/media/219154/cdoif_guideline__environmental_risk_assessment_v2.pdf

22. Cumulative Effects

22.1.1. The Cumulative Effects Assessment (CEA) will explore the way in which the predicted effects on receptors/resources that are reported in topic chapters may alter when they are considered in their totality (i.e. across all topic assessments). These are intra-project cumulative effects (which reflects the DMRB LA104[24] definition of 'single project impacts'). The CEA will also consider the impacts of the Proposed Development in the context of RFFPs that could potentially interact with the Proposed Development – these are inter-project cumulative effects (which reflects the DMRB LA104 definition of 'different project impacts').

22.1.2. The consideration of the cumulative impacts is drawn together by receptors and/or biophysical features deemed likely to experience effects due to cumulative impacts, whether intra-project or inter-project or, potentially, both. The sensitivity of a receptor or biophysical feature to cumulative impacts and the magnitude of incremental impacts (combining to become cumulative impacts) themselves will determine the significance of the cumulative effect or effects.

22.1.3. This section provides an overview of the way the two different elements of the CEA will be approached. Table 22-1 sets out how the findings will be reported within the ES for the Proposed Development.

22.2. Intra-project cross-topic cumulative effects

22.2.1. The topic Chapters each define a specialist assessment methodology, which results in differing approaches to drawing out the significant intra-project effects. In some instances, such as the cultural heritage assessment and the assessment of effects on human health, methodologies incorporate the consideration of in-combination intra-project cumulative impacts as an inherent part of drawing conclusions about the type, magnitude and potential significance of effects within the main assessment. In such instances, the cumulative intra-project effects assessment section of the topic Chapter signposts which of the significant effects noted in the main assessment findings are due to in-combination cumulative effects, rather than repeating or incorporating additional assessment work. This information will then be summarised in the CEA Chapter of the ES.

22.2.2. There are also topics where the methodologies reference adherence to specific legislation or best practice that require all projects to incorporate design or control measures to ensure significant adverse effects are prevented, such as air quality assessment. In these cases, the cumulative intra-project effects assessment section of the topic Chapter references receptors and/or biophysical features for which more stringent control measures (for example, controls on construction activities written into an Environmental Management Plan or similar document) are considered necessary as a reflection of receptors that, in the absence of such controls (a form of mitigation), would potentially experience significant intra-project in-combination effects.

22.2.3. The CEA findings will also draw on environmental design measures and mitigation proposals that have been developed from the iterative process of assessment and design, as a means of highlighting how the Proposed Development has evolved to address intra-project impacts, in accordance with the mitigation hierarchy. For example, ecological mitigation areas targeting more than one species are designed to address intra-project cumulative impacts identified through the ecological assessment that would, in the absence of the proposals, give rise to potentially significant cumulative effects. Similarly, combined

landscape and environmental design measures target locations where, in the absence of the proposals, intra-project cumulative effects on ecological and landscape biophysical resources may potentially be significant.

22.2.4. The findings of the topic assessments, including the reporting of significant intra-project cumulative effects, will inform the identification of receptors that will need to be considered in terms of cross-topic intra-project cumulative effects. This will be achieved by correlating the reported impacts to individual receptors and/or biophysical features and considering the implications of overlapping effects, taking each receptor experiencing 2+ effects in turn.

22.2.5. The ES will include a summary table of intra-project effects cross-topic, by receptor and/or biophysical feature, within the CEA chapter. The cross-topic intra-project CEA is to be described in a receptor-centric manner, focusing on common receptor types and/or geographic locations where at least two different types of impacts are predicted to interact to result in significant intra-project cumulative effects. The ES structure will be developed to allow for separate sections for the CEA to be written up within the specialist topic Chapters, to facilitate this approach (see Table 22-1)

22.2.6. Intra-project additive cumulative impacts will also be included within the ES, for example, through the provision of total physical impacts of land take on specific resources and/or biophysical features. However, this type of reporting is an inherent characteristic of certain topic Chapters (e.g. total loss of best and most versatile agricultural land, as part of the geology and soils assessment topic). It is therefore not drawn out separately for topics where this is part of their methodology.

22.3. Inter-project cross-topic cumulative effects

22.3.1. Central to the assessment of inter-project cumulative effects is an understanding of what projects are likely to come forward within timeframes that overlap with either the construction or operational phase of the Proposed Development. This is the purpose of generating the RFFP list for the Proposed Development, the methodology for which is set out below.

22.3.2. At the next stage of the EIA process a RFFP long-list will be generated using information collated from planning application databases, the PINS online database (for relevant Nationally Significant Infrastructure Projects) and adopted planning policy. A RFFP long-list has not been included at this scoping stage as projects enter the planning system on a dynamic basis and for this Proposed Development, it will be more efficient to commence this collation work once the EIA process has progressed beyond scoping.

22.3.3. The formation of a Scoping Opinion does provide an opportunity for statutory consultees to reference any additional projects that may merit consideration. Comment may also be made on the methodology set out below that will be used to shortlist RFFPs.

22.3.4. The inter-project CEA will make use of two future baselines for the Proposed Development to be considered against, making informed assumptions to categorise the likely progression of shortlisted RFFPs, for the purposes of consistent assessment:

- Opening year future baseline: RFFPs may be categorised as 'undeveloped'; 'under construction' in the same timeframe as the opening of the Proposed Development; or form new 'receptors/resources' that would be in place and operational in the same timeframe as the opening of the Proposed development.

- Operational future baseline (opening year + 5 years): RFFPs may be anticipated to be 'under construction' in the same timeframe as the operational future baseline; or form new 'receptors/resources' that would be in place and operational.

22.3.5. The future baseline environment comprises the existing baseline, together with new or changed characteristics and conditions that can reasonably be predicted to be present during construction and/or operation of the Proposed Development. The changed land use characteristics are derived from the short-list of RFFPs, which will be developed from a review and refinement of the long-list that will be generated at the next stage in the EIA process. The future baseline also includes forecast changes in traffic conditions projected within local authority traffic forecast models. Further details about this will be referenced in the air quality and noise and vibration topic Chapters of the ES, which will draw on traffic modelling outputs.

22.3.6. The findings from topic assessments that identify significant cumulative effects serve as the basis for isolating RFFPs that require consideration in relation to cross-topic inter-project cumulative effects. RFFPs are determined for further analysis when two or more topics report significant cumulative effects, and to ensure a comprehensive evaluation of impacts across all relevant areas, a cross-referenced table of all assessment topic findings for the qualifying RFFPs is developed.

22.3.7. Reporting within the ES may follow one of two approaches. Typically, assessments are conducted on an individual RFFP basis. However, when two or more RFFPs, in conjunction with the Proposed Development, impact a single receptor, the reporting will adopt a receptor-centric approach to ensure a comprehensive evaluation of cumulative effects.

Table 22-1 Types of cumulative impacts and location of reporting in the ES

Types of Cumulative Impacts	Location of Reporting within the ES
Intra-project cumulative Impacts (single project impacts)	
Intra-project in-combination cumulative impacts, identified within specialist chapters	If relevant, reported within specialist topic chapters. Reporting is provided under the Cumulative Effects sub-heading in instances where a receptor has been assessed as experiencing a number of different environmental effects relating to that topic.
Intra-project in-combination cumulative impacts across topics	Reported within the CEA chapter. Reporting is provided within the CEA chapter in instances where a receptor has been assessed as experiencing different environmental effects relating to two or more specialist topic assessments.
Inter-project cumulative impacts (different project impacts)	
Inter-project additive cumulative impacts within specialist topic chapters	If relevant, reported within specialist topic chapters. Reporting is provided under the Cumulative Effects sub-heading in instances where a receptor has been assessed as experiencing an impact from the Proposed Development that combines with the same type of impact from one or more RFFPs, resulting in a greater magnitude of impact.
Inter-project additive cumulative impacts across topics	Reported within the CEA chapter. Reporting is provided within the CEA chapter in instances where a receptor has been assessed as experiencing additive cumulative impacts from the Proposed Development and other developments across two or more topic areas.
Inter-project in-combination cumulative impacts within specialist topic chapters	If relevant, reported within specialist topic chapters. Reporting is provided under the Cumulative Effects sub-heading in instances where a receptor has been assessed as experiencing an impact from the Proposed Development that combines with one or more different types of impact from RFFPs, resulting in a third type of effect.

22.4. Methodology for long listing Reasonably Foreseeable Future Projects (RFFPs)

22.4.1. This section supports the Cumulative Effects Assessment (CEA) section of the main report. It describes the way in which the RFFP long-list is generated, to enable the inter-project cumulative effects assessment. It describes how the RFFP longlisting and shortlisting will be undertaken at the next stage of the EIA process.

Generating the RFFP long list

22.4.2. RFFPs are projects that are known to the planning system or already in the consenting process or under construction at the same time as the Proposed Development. The definition of RFFPs proposed to be applied to the Proposed Development has been developed in consideration of the standard within DMRB LA 104[24], but also extended to

encapsulate additional project types, which is based on consideration of potential 'zones of influence' for different environmental aspects, reflecting the approach proposed in the advice published by PINS (most recently updated in March 2025)[64].

22.4.3. The RFFP long-list will aim to capture all 'other projects' that fall into one of the following categories:

- major planning applications within 500 m of the Site Boundary (migrating to Order Limits over time) for the Proposed Development and the anticipated principal access routes to the Site. This will encompass planning applications for 10 or more dwellings, planning applications incorporating commercial/recreational floor space over 1,000 sqm, or a site exceeding 1 ha;
- planning applications adjacent or within 250 m of the Site Boundary (migrating to Order Limits in time) for the Proposed Development that have been granted planning permission or are pending determination since a date that reflects the 3-year period within which granted developments must commence works (at the point at which the RFFP long list is first produced);
- proposals registered with PINS as forthcoming applications for DCOs. Professional judgement will be used to determine which are of relevance to the Proposed Development in the context of possible cumulative impacts, using proximity to the Proposed Development as a key consideration;
- registered Transport and Works Act Order applications near to the Proposed Development. Professional judgement will be used to determine which are of relevance to the Proposed Development in the context of possible cumulative impacts, using proximity to the Proposed Development as a key consideration; and
- Development Plan projects such as site allocations and transport initiatives scheduled for development prior to the future operational baseline that are within 500 m of the Site Boundary (migrating to the Order Limits in time) for the Proposed Development, and the anticipated principal access routes to Site, subject to desk-based validation of sufficient evidence available relating to the proposed other developments to allow a meaningful cumulative effects assessment.
- approved projects that are under construction or recently constructed and operating that will have a direct impact interaction with the Proposed Development's design or operation (i.e. within the Order Limits, once defined).

22.4.4. The first iteration of the RFFP long-list for the Proposed Development will be produced at the next stage in the EIA process.

22.4.5. It is expected that at least one review will be carried out as the ES is produced. This reflects the cyclical approach to compiling the long and short lists of 'other existing development and/or approved development' set out within the PINS Advice four-staged approach to undertaking what it terms 'cumulative effects assessment' (CEA)64. This review process (representative of stages 1 and 2 of the PINS CEA approach) will comprise a desk-based screening exercise to identify whether any of the RFFP long-list projects have already been constructed; and determine whether anything needs to be added. These will then be updated and shared with the local planning authority (host authority) and other relevant stakeholders (e.g. neighbouring authorities) for confirmation, prior to refinement into a

[64] GOV.UK Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment. (September 2024 (last updated March 2025)). Available online at: Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment - GOV.UK

short-list, noting that the constructed projects would need to be included in the description of the existing baseline (as updated for the ES), to feature as receptors for consideration in the main EIA process.

Preparing the RFFP shortlist

22.4.6. As the EIA progresses, the RFFP long-list will be screened in order to produce an RFFP shortlist for the CEA. This screening will be undertaken by each of the topic specialists with the aim of identifying those developments that have reasonable potential to interact with the Proposed Development in respect of their topic and, therefore, potentially give rise to impacts that could result in cumulative effects.

22.4.7. The methodology and consideration that will be applied by each topic to complete the screening exercise will be set out in the CEA sections of each topic Chapter in the ES, supported by a screening appendix if appropriate. This will typically be based on a combination of development type, proximity and the likelihood of impact pathways between the Proposed Development and the RFFP for the topic under consideration. The consideration of impact pathways usually allows for mandatory regulatory/legislative requirements that all developers must meet, for example, air quality control measures that would essentially negate risks of impact interactions between the Proposed Development and RFFPs.

22.4.8. RFFPs are screened out where the likelihood of interactions with the Proposed Development is extremely low/negligible. Where appropriate, specialists will then complete a scoping exercise to exclude detailed consideration of RFFPs where there is a robust justification for assuming that cumulative impacts would not occur between the Proposed Development and the RFFP – this will also be set out in individual topic Chapters in the ES. This approach will assist in tightening the scope of the consideration of RFFPs and specialist topic assessment to cumulative impacts that bring meaningful inputs to the overall ES findings, delivering a proportional assessment that focuses on the potential for significant inter-project cumulative effects.

22.4.9. The screening and scoping process will allow an RFFP shortlist to be produced. This will be consulted upon and agreed with relevant stakeholders prior to incorporation within the EIA process.

22.4.10. For each short-listed RFFP, progression through the consenting and development processes will be reviewed, drawing on publicly available information and comments from stakeholder consultation.

22.4.11. Assumptions will be made about the most likely stage of their development in relation to the Proposed Development construction baseline; and operational future baseline, with each RFFP assigned to one of the following categories to inform the completion of the inter-project cumulative impact assessment work:

- Construction baseline - 'undeveloped site', which is used for a site at which construction is not expected to commence until the Proposed Development is operational. An RFFP in this category would not be shortlisted for consideration within the construction phase CEA.
- Construction baseline - 'under construction' in the same timeframe as the Proposed Development, reflecting at least a partial overlap in construction timeframes. An RFFP in this category would be considered in the context of concurrent construction with the Proposed Development.

- Construction baseline - 'receptor', which is used for a site where construction is expected to be complete prior to the start of construction of the Proposed Development. RFFPs within this category would be considered a pre-construction baseline change and would therefore be scoped out of the CEA. Instead, they would be reflected in the main assessment for each topic chapter, as a receptor.
- Future baseline - 'under construction' as the Proposed Development commences operation, The CEA would consider the combination of construction impacts from the RFFP with operational impacts from the Proposed Development, on relevant receptors.
- Future baseline - 'receptor', which is used for a site where development will be complete and in occupation, therefore forming a receptor and/or biophysical feature for the operational phase of the Proposed Development, possibly, having potential to experience operational impacts from, or give rise to impacts to the Proposed Development.

22.4.12. Information is provided in the main CEA chapter (Chapter 22 of the Scoping Report) to describe how the RFFP shortlisted projects are then used to undertake the inter-project cumulative effects assessment.